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OF THE



U.S. INTERNATIONAL
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1876.

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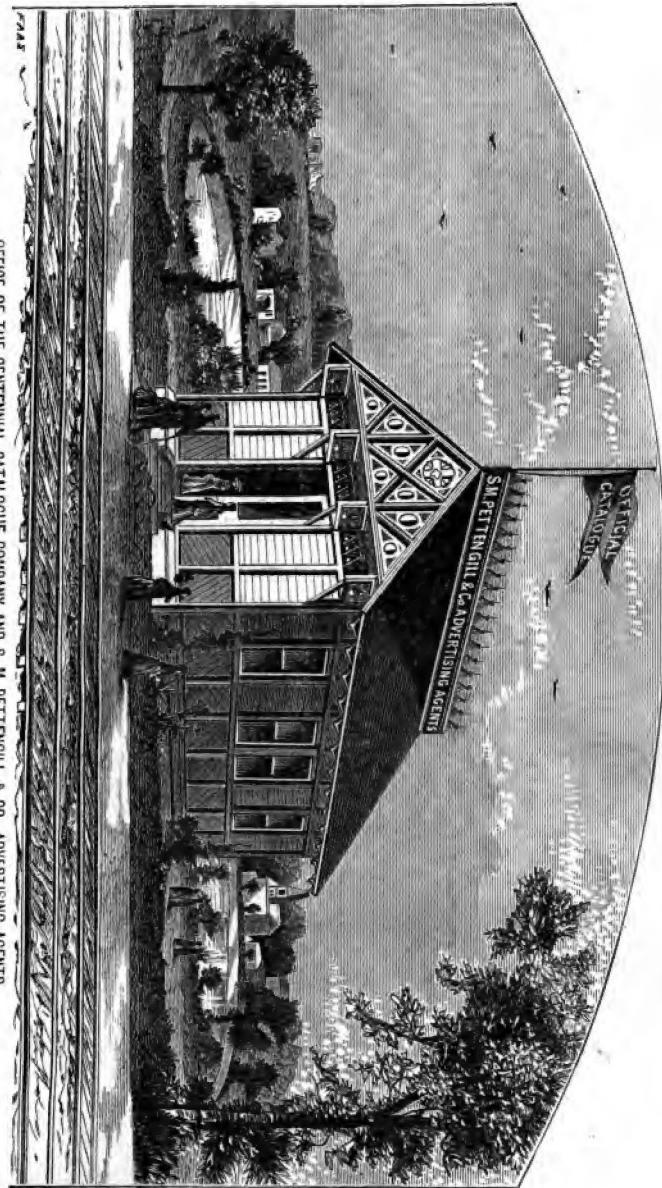
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UNITED STATES CENTENNIAL COMMISSION.

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INTERNATIONAL EXHIBITION,

1876.

OFFICIAL CATALOGUE

COMPLETE IN ONE VOLUME.

- I. MAIN BUILDING.
- II. DEPARTMENT OF MACHINERY.
- III. DEPARTMENT OF ART.
- IV. DEPARTMENTS OF AGRICULTURE AND
HORTICULTURE.

PHILADELPHIA:
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SUBJECT INDEX, NATIONAL EXHIBITS.

DEPARTMENT II. DEPT. I.

DEPT. III.

THE INTERNATIONAL EXHIBITION OF 1876.

THE Congress of the United States, by an act approved March 3d, 1871, provided that the centennial anniversary of the promulgation of the Declaration of American Independence in Philadelphia should be celebrated in that city "by holding an International Exhibition of Arts, Manufactures, and Products of the Soil and Mine." The preparation of the Exhibition was, by the act, confided to the United States Centennial Commission, composed of a commissioner and alternate commissioner nominated by the governor of each State and Territory, and confirmed by the President of the United States. A subsequent act, approved June 1st, 1872, created the Centennial Board of Finance, charged with the financial conduct of the Exhibition.

A proclamation by the President of the United States, dated July 3d, 1873, announced the International Exhibition, and commended it to all nations. An act of Congress, approved June 5th, 1874, requested the President, in the name of the United States, to invite the governments of foreign nations to participate in the Exhibition. The invitation thus extended was accepted by the governments of

Argentine Republic,	Queensland,	Netherlands,
Austria-Hungary,	New Zealand,	Norway,
Belgium,	New South Wales,	Orange Free State,
Brazil,	Victoria,	Peru,
Canada,	South Australia,	Portugal,
Chili,	India,	Russia,
China,	Cape Colony,	Spain,
Denmark,	Bermuda, and	Sweden,
Egypt,	Jamaica,	Switzerland,
France, with Algeria,	Hawaii,	Tunis,
Germany,	Italy,	Turkey,
Great Britain, with colonies, viz.	Japan,	Venezuela.
	Mexico,	

The Centennial Commission provided for the classification of the objects to be exhibited in seven departments, which were referred to five exhibition buildings in this manner:

DEPARTMENT.	BUILDINGS.	ACRES COVERED.
I. Mining and Metallurgy,	Main Building,	21.47
II. Manufactures,		1.5
III. Education and Science,		14.
IV. Art,	Art Gallery	10.
V. Machinery,	Machinery Building,	1.5
VI. Agriculture,	Agricultural Building,	
VII. Horticulture,	Horticultural Building,	
Total,		48.47

The applications for exhibiting space, however, both at home and from abroad, so exceeded the calculations that had been made as to necessitate the erection of annexes supplementing the capacity of each of these buildings. Enumerations of these additional structures will be found on subsequent pages. The classes of objects grouped in the several departments are indicated in the following synopsis of the classification of the Exhibition.

SYNOPSIS OF THE CLASSIFICATION.

LOCATION.	DEPARTMENTS.	CLASSES.	GROUPS.
MAIN BUILDING.	I. MINING AND METALLURGY.	100—109	Minerals, Ores, Stone, Mining Products.
		110—119	Metallurgical Products.
		120—129	Mining Engineering.
	II. MANUFACTURES.	200—205	Chemical Manufactures.
		206—216	Ceramics, Pottery, Porcelain, Glass, etc.
		217—227	Furniture, etc.
		228—234	Yarns and Woven Goods of Vegetable or Mineral Materials.
		235—241	Woven and Felted Goods of Wool, etc.
		242—249	Silk and Silk Fabrics.
		250—257	Clothing, Jewelry, etc.
		258—264	Paper, Blank Books, Stationery.
		265—271	Weapons, etc.
		272—279	Medicine, Surgery, Prothesis.
		280—284	Hardware, Edge Tools, Cutlery, and Metallic Products.
		285—291	Fabrics of Vegetable, Animal, or Mineral Materials.
		292—296	Carriages, Vehicles, and Accessories.
ART GALLERY.	III. EDUCATION AND SCIENCE	300—309	Educational Systems, Methods, and Libraries.
		310—319	Institutions and Organizations.
		320—329	Scientific and Philosophical Instruments and Methods.
		330—339	Engineering, Architecture, Maps, etc.
		340—349	Physical, Social, and Moral Condition of Man.
MACHINERY BUILDING.	IV. ART.	400—409	Sculpture,
		410—419	Painting.
		420—429	Engraving and Lithography.
		430—439	Photography.
		440—449	Industrial and Architectural Designs, etc.
		450—459	Ceramic Decorations, Mosaics, etc.
	V. MACHINERY.	500—509	Machines, Tools, etc., of Mining, Chemistry, etc.
		510—519	Machines and Tools for working Metal, Wood, and Stone.
		520—529	Machines and Implements of Spinning, Weaving, etc.
		530—539	Machines, etc., used in Sewing, Making Clothing, etc.
		540—549	Machines for Printing, Making Books, Paper Working, etc.
AGRICULTURAL BUILDING.	VI. AGRICULTURE	550—559	Motors, Power Generators, etc.
		560—569	Hydraulic and Pneumatic Apparatus.
		570—579	Railway Plant, Rolling Stock, etc.
		580—589	Machinery used in Preparing Agricultural Products.
		590—599	Aerial, Pneumatic, and Water Transportation.
		600—609	Machinery, and Apparatus, especially adapted to the requirements of the Exhibition.
		610—619	
		620—629	
		630—639	
		640—649	
HORTICULTURAL BUILDING.	VII. HORTICULTURE	650—662	Arboriculture and Forest Products.
		665—669	Boriology.
		670—679	Agricultural Products.
		680—689	Land Animals.
		690—699	Marine Animals, Fish Culture, and Apparatus.
		700—709	Animal and Vegetable Products.
		710—719	Textile Substances of Vegetable or Animal origin.
		720—729	Machines, Implements, and Processes of Manufacture.
		730—739	Agricultural Engineering and Administration.
			Tillage and General Management.
		740—749	Ornamental Trees, Shrubs, and Flowers.
		750—759	Hot Houses, Conservatories, Graperies.
		760—769	Garden Tools, Accessories of Gardening.
		770—779	Garden Designing, Construction, and Management.
		780—789	

The full text of the classification of the several Departments will be found at the commencement of the enumeration of objects shown in each. The distribution of the departments and buildings through the four volumes of the catalogue, is as follows:

VOLUME I.—DEPARTMENT I. Mining and Metallurgy · **II. Manufactures** ;
III. Education and Science. Main Building and Annexes.

VOLUME II.—DEPARTMENT IV. Art. Memorial Hall and Annexes.

VOLUME III.—DEPARTMENT V. Machinery. Machinery Building and Annexes. Buildings of United States government and foreign governments, of State governments, and of individual exhibitors.

VOLUME IV.—DEPARTMENT VI. Agriculture ; **VII. Horticulture.** Agricultural and Horticultural Buildings and Annexes.

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INTERNATIONAL EXHIBITION OF 1876.

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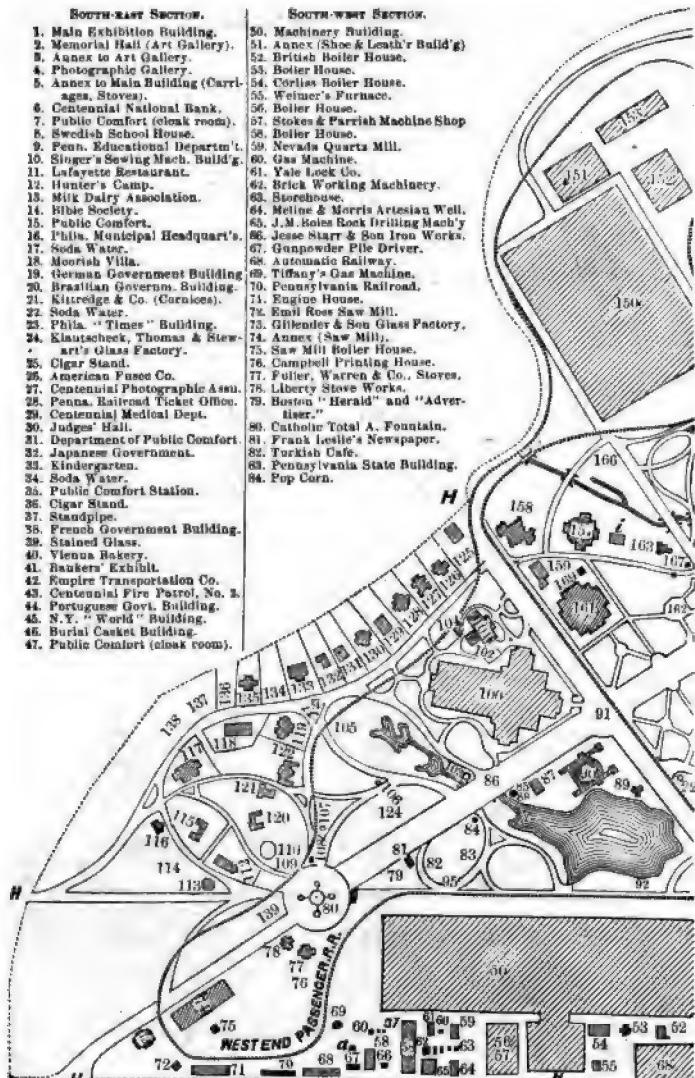
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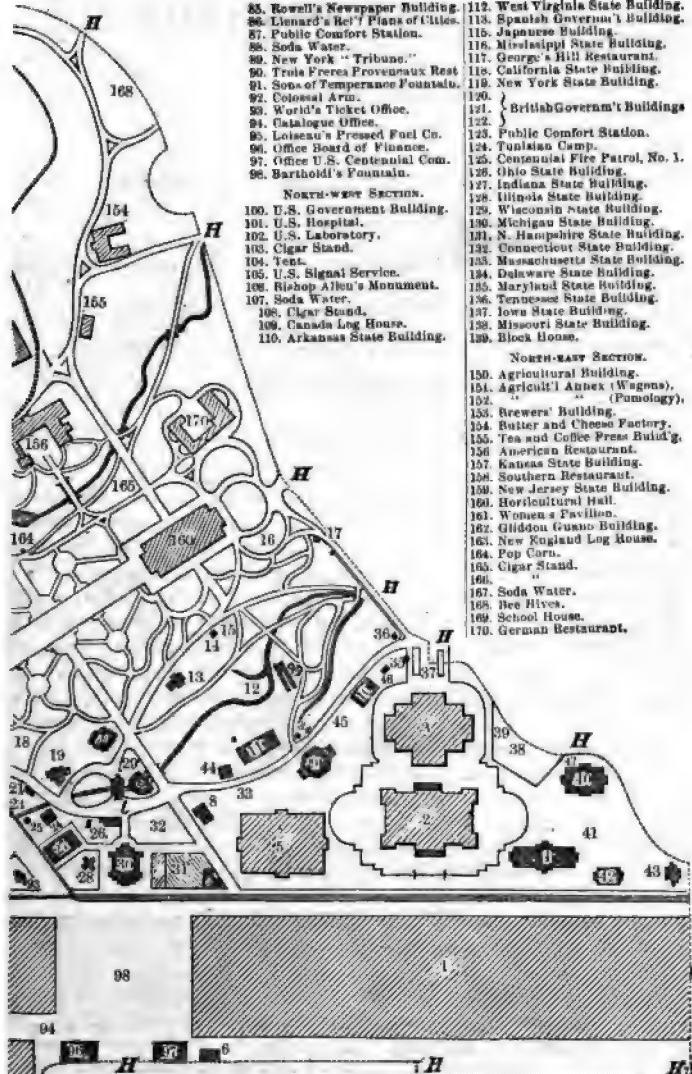
1. Main Exhibition Building.
2. Memorial Hall (Art Gallery).
3. Annex to Art Gallery.
4. Photographic Gallery.
5. Annex to Main Building (Carriages, Stoves).
6. Centennial National Bank.
7. Cabinet Craft (cloak room).
8. Swedish School House.
9. Penn. Educational Department.
10. Singer's Sewing Mach. Build'g.
11. Lafayette Restaurant.
12. Hunter's Camp.
13. Milk Dairy Association.
14. Bible Society.
15. Public Comfort.
16. Philadelphia Municipal Headquar'ts.
17. Soda Water.
18. Mineral Hill.
19. German Government Building.
20. Brazilian Government Building.
21. Kittridge & Co. (Carnicles).
22. Soda Water.
23. Phila. "Times" Building.
24. Klautscheck, Thomas & Stewart's Glass Factory.
25. Cigar Stand.
26. American Picnic Co.
27. Centennial Photographic Assn.
28. Pennsylvania Railroad Ticket Office.
29. Centennial Medical Dept.
30. Judges' Hall.
31. Department of Public Comfort.
32. Japanese Government.
33. Kindergarten.
34. Soda Water.
35. Public Comfort Station.
36. Cigar Stand.
37. Handpiping.
38. French Government Building.
39. Stained Glass.
40. Vienna Bakery.
41. Bankers' Exhibit.
42. Empire Transportation Co.
43. Centennial Fire Patrol, No. 1.
44. Portuguese Govt. Building.
45. N.Y. "World" Building.
46. Burial Casket Building.
47. Public Comfort (cloak room).

SOUTH-WEST SECTION.

50. Machinery Building.
51. Annex (Shoe & Leather Build'g).
52. British Boiler House.
53. Boiler House.
54. Corliss Boiler House.
55. Weimer's Furnace.
56. Boiler House.
57. Stoen & French Machine Shop.
58. Boiler House.
59. Nevada Quartz Mill.
60. Gas Machine.
61. Yale Lock Co.
62. Brick Working Machinery.
63. Storehouse.
64. Melville & Morris Artesian Well.
65. J.M. Boies Rock Drilling Mach'y.
66. Jesse Starr & Son Iron Works.
67. Grammatical Auto Driver.
68. Automatic Railway.
69. Tiffany's Gas Machine.
70. Pennsylvania Railroad.
71. Engine House.
72. Emil Roos Saw Mill.
73. Gilkender & Son Glass Factory.
74. Annex (Saw Mill).
75. Saw Mill Boiler House.
76. Campbell Printing House.
77. Fuller, Warren & Co. Stores.
78. Library Stove Works.
79. Boston Herald" and "Advertiser."
80. Catholic Total A. Fountain.
81. Frank Leslie's Newspaper.
82. Turkish Cafe.
83. Pennsylvania State Building.
84. Pop Corn.



GROUND PLAN OF THE



INTERNATIONAL EXHIBITION.



THE MAIN EXHIBITION BUILDING. No. I.

Size, 1880 by 464 feet.

Engineers and Architects, HENRY PETTIT & JOS. M. WILSON.

Contractor, R. J. DOBBINS.

Wrought and Cast Iron Manufactured by WM. SELLERS & Co., Moor Iron Works.

Wrought Iron Furnished by A. & P. ROBERTS, Pencoyd Rolling Mills.

Cast Iron Furnished by MORRIS, TASKER, & Co., Pascal Iron Works.

Erector of Iron Work, WATSON MANUFACTURING CO.

THE Main Exhibition Building, containing Departments I, II, III of the Exhibition, is in the form of a parallelogram, extending east and west 1880 feet in length, and north and south 464 feet in width.

The larger portion of the structure is one story in height, and shows the main cornice upon the outside at 45 feet above the ground, the interior height being 70 feet. At the centre of the longer sides are projections 416 feet in length, and in the centre of the shorter sides or ends of the building are projections 216 feet in length. In these projections, in the centre of the four sides, are located the main entrances, which are provided with arcades upon the ground floor, and central facades extending to the height of 90 feet.

The East Entrance forms the principal approach for carriages, visitors being allowed to alight at the doors of the building under cover of the arcade. The South Entrance is the principal approach from street cars, the ticket offices being located upon the line of Elm Avenue, with covered ways provided for entrance into the building itself. The Main Portal on the north side communicates with the Art Gallery, and the Main Portal on the west side gives the main passage way to the Machinery and Agricultural Halls.

Upon the corners of the building there are four towers, 75 feet in height, and between the towers and the central projections or entrances there is a lower roof introduced, showing a cornice at 24 feet above the ground. In order to obtain a central feature for the building as a whole, the roof over the central part, of 184 feet square, has been raised above the surrounding portion, and four towers, 48 feet square, rising to 120 feet in height, have been introduced at the corners of the elevated roof.

The areas covered are as follows:

	SQUARE FEET.	ACRES.
Ground floor,	872,320	20.02
Upper floors in projections,	37,344	.85
" in towers,	26,344	.60
	<hr/>	<hr/>
	936,008	21.47

DESCRIPTION OF THE

The general arrangement of the ground plan shows a central avenue or nave 120 feet in width, and extending 1832 feet in length. This is the longest avenue of that width ever introduced into an exhibition building. On either side of this nave there is an avenue 100 feet by 1832 feet in length. Between the nave and side avenues are aisles 48 feet wide, and on the outer sides of the building smaller aisles 24 feet in width. In order to break the great length of the roof lines, three cross avenues or transepts have been introduced of the same widths and in the same relative positions to each other as the nave and avenues running lengthwise, viz.: a central transept 120 feet in width by 416 feet in length, with one on either side of 100 feet by 416 feet, and aisles between of 48 feet. The intersections of these avenues and transepts in the central portion of the building result in dividing the ground floor into nine open spaces, free from supporting columns, and covering in the aggregate an area of 416 feet square. Four of these spaces are 100 feet square, four 100 feet by 120 feet, and the central space or pavilion 120 feet square. The intersections of the 48 feet aisles produce four interior courts 48 feet square, one at each corner of the central space. The main promenades through the nave and central transept are each 30 feet in width, and those through the centre of the side avenues and transepts 15 feet each. All other walks are 10 feet wide, and lead at either end to exit doors.

The following table gives the principal dimensions of the different parts of the building:

DIMENSIONS.

Measurements taken from centre to centre of supporting columns.

Length of building,	1880 feet
Width of building,	464 "
CENTRAL AVENUE OR NAVE.	
Length,	1832 feet.
Width,	120 "
Height to top of supporting columns,	45 "
Height to ridge of roof,	70 "
CENTRAL TRANSEPT.	
Length,	416 "
Width,	120 "
Height to top of columns,	45 "
Height to ridge of roof,	70 "
SIDE AVENUES.	
Length,	1832 "
Width,	100 "
Height to top of columns,	45 "
Height to ridge of roof,	65 "
SIDE TRANSEPTS.	
Length,	416 "
Width,	100 "
Height to top of columns,	45 "
Height to ridge of roof,	65 "
CENTRAL AISLES.	
Length at east end,	744 feet.
" at west end,	672 "
Width,	48 "
Height to roof,	30 "
SIDE AISLES.	
Length at east end,	744 "
" at west end,	672 "
Width,	24 "
Height to roof,	24 "
CENTRE SPACE OR PAVILION.	
Ground plan,	120 ft. sq.
Height to top of supporting columns,	72 "
Height to ridge of roof,	96 "
TOWERS OVER COURTS.	
Ground plan,	48 "
Height to roof,	120 "
CORNER TOWERS.	
Ground plan,	24 "
Height to roof,	75 "

The foundations consist of piers of masonry. The superstructure is composed of wrought iron columns, which support wrought iron roof trusses. These columns are composed of rolled channel bars, with plates riveted to the flanges. Lengthwise of the building the columns are spaced at the uniform distance apart of 24 feet. In the entire structure there are 672 columns, the shortest being 23 feet and the longest 125 feet in length. Their aggregate weight is 2,200,000 pounds. The roof trusses

are similar in form to those in general use for depots and warehouses, and consist of straight rafters with struts and tie-bars. The aggregate weight of iron in the roof trusses and girders is 5,000,000 pounds. This building being a temporary construction, the columns and trusses are so designed that they may be easily taken down and erected again at another site.

The sides of the building, for the height of seven feet from the ground, are finished with brickwork in panels between the columns; above the seven feet, with glazed sash. Portions of the sash are movable for ventilation. The roof covering is of tin upon sheathing boards. The ground flooring is of plank upon sills resting upon the ground, with no open space underneath.

The building stands nearly due east and west, and is lighted almost entirely by side light from the north and south sides. Louvre ventilators are introduced over the central nave and each of the avenues. Skylights are introduced over the central aisles.

Small balconies, or galleries of observation, have been provided in the four central towers of the building at the heights of the different stories.

A complete system of water supply, with ample provision of fire cocks, etc., is provided for protection against fire, and for sanitary purposes.

Offices for foreign commissions are placed along the sides of the building, in the side aisles, in proximity to the products exhibited.

The ground was graded and foundation laid for this building in the autumn of 1874. The erection of iron work at the site commenced on May 8th, 1875; the erection of the iron work was finished December ad, 1875; and the building was accepted from the contractor February 14th, 1876. The cost of the building was \$1,580,000.

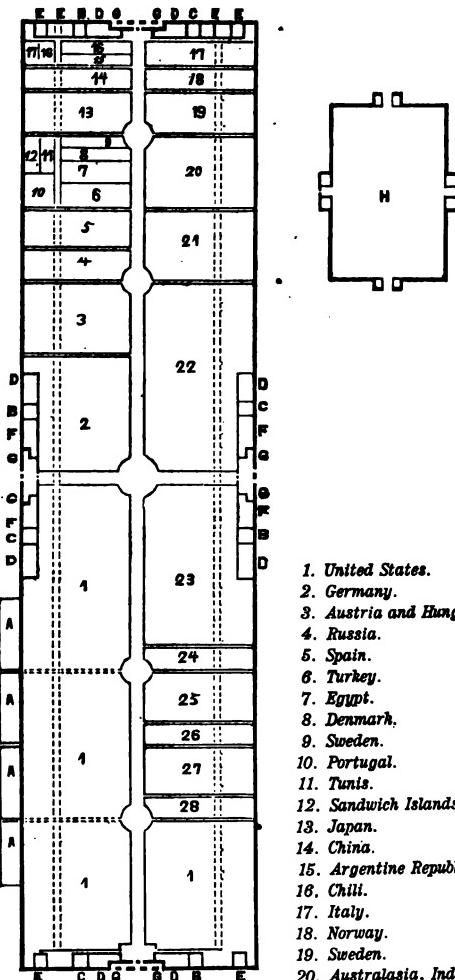
KEY TO THE NOTATION.

THE location of objects in the Main Building is shown by a letter and figure, indicating the nearest column of the building. The letters—A, B, C, to U—designate the successive ranges of columns, proceeding southward from the northern wall across the width of the building; the figures, the number of the column in each range, counting eastwardly from the western wall, the entire length of the building, from 1 to 79. Thus C 5 is the column in the third range from the north, and the fifth from the western end of the building. The southeasternmost column is U 79.

The class of the classification to which each exhibit belongs is indicated by the small figures at the end of the line.

MAIN EXHIBITION BUILDING.

Scale, 360 ft. to 1 in.



1. United States.
2. Germany.
3. Austria and Hungary.
4. Russia.
5. Spain.
6. Turkey.
7. Egypt.
8. Denmark.
9. Sweden.
10. Portugal.
11. Tunis.
12. Sandwich Islands.
13. Japan.
14. China.
15. Argentine Republic.
16. Chili.
17. Italy.
18. Norway.
19. Sweden.
20. Australasia, India, and other Colonies.

21. Canada.
22. Great Britain.
23. France and Colonies.
24. Switzerland.
25. Belgium.
26. Brazil.
27. Netherlands.
28. Mexico.

Total Length, 1880 ft. Width, 464 ft. Height, 70 ft.

CLASSIFICATION.

DEPARTMENT I.—MINING AND METALLURGY.

MINERALS, ORES, STONE, MINING PRODUCTS.

CLASS 100.—Minerals, ores, etc. Metallic and non-metallic minerals, exclusive of coal and oil. Collections of minerals systematically arranged; collections of ores and associated minerals; geological collections.

CLASS 101.—Mineral combustibles. Coal, anthracite, semi-bituminous, and bituminous, coal-waste and pressed coal; albertite, asphalt, and asphaltic limestone; bitumen, mineral tar, crude petroleum.

CLASS 102.—Building stones, marbles, slates, etc. Rough, hewn, sawn, or polished, for buildings, bridges, walls, or other constructions, or for interior decoration, or for furniture.

Marble—white, black, or colored—used in building, decoration, statuary, monuments, or furniture, in blocks or slabs not manufactured.

CLASS 103.—Lime, cement, and hydraulic cement, raw and burned, accompanied by specimens of the crude rock or material used, also artificial stone, concrete, beton.

Specimens of lime mortar and mixtures, with illustrations of the processes of mixing, etc. Hydraulic and other cement.

Beton mixtures and results, with illustrations of the processes.

Artificial stone for building purposes, building blocks, cornices, etc.

Artificial stone mixtures, for pavements, walls, or ceilings.

Plasters, mastics, etc.

CLASS 104.—Clays, kaolin, silex, and other materials for the manufacture of porcelain faience, and of glass, bricks, terra cotta and tiles, and fire brick. Refractory stones for lining furnaces, sandstone, steatite, etc., and refractory furnace materials.

CLASS 105.—Graphite, crude and refined; for polishing purposes; for lubricating, electrotyping, photography, pencils, etc.

CLASS 106.—Lithographic stones, hones, whetstones, grindstones, grinding and polishing materials, sand quartz, garnet, crude topaz, diamond, corundum, emery in the rock and pulverized, and in assorted sizes and grades.

CLASS 107.—Mineral waters, artesian well water, natural brines, saline and alkaline efflorescences and solutions. Mineral fertilizing substances, gypsum, phosphate of lime, marls, shells, coprolites, etc., not manufactured.

METALLURGICAL PRODUCTS.

CLASS 110.—Precious metals.

CLASS 111.—Iron and steel in the pig, ingot, and bar, plates and sheets, with specimens of slags, fluxes, residues, and products of working.

CLASSIFICATION.

CLASS 112.—Copper in ingots, bars, and rolled, with specimens illustrating its various stages of production.

CLASS 113.—Lead, zinc, antimony, and other metals, the result of extractive processes.

CLASS 114.—Alloys used as materials, brass, nickel, silver, solder, etc.

MINING ENGINEERING—MODELS, MAPS, AND SECTIONS.

CLASS 120.—Surface and underground surveying and plotting. Projection of underground work, location of shafts, tunnels, etc. Surveys for aqueducts and for drainage.

Boring and drilling rocks, shafts, and tunnels, etc. Surveys for aqueducts, and for ascertaining the nature and extent of mineral deposits.

Construction. Sinking and lining shafts by various methods, driving and timbering tunnels, and the general operations of opening, stoping, and breaking down ore, timbering, lagging, and masonry.

Hoisting and delivering at the surface, rock, ore, or miners.

Pumping and draining by engines, buckets, or by adits.

Ventilation and lighting.

Subaqueous mining, blasting, etc.

Hydraulic mining, and the various processes and methods of sluicing and washing auriferous gravel and other superficial deposits.

Quarrying.

CLASS 121.—Models of mines, veins, etc.

UNITED STATES.—STATISTICAL PREFACE.

THE United States of America occupy the entire width of the central portion of North America, between latitude $24^{\circ} 30'$ and 49° north, and from longitude $66^{\circ} 50'$ and $124^{\circ} 30'$ west. They are bounded, north, by New Brunswick, Canada (from which they are separated by the river St. Lawrence and the great lakes), and British Columbia; on the south, by Mexico and the Gulf of Mexico; east, by the Atlantic; and west, by the Pacific Ocean. Their greatest breadth, from Cape Cod, on the Atlantic, to the Pacific, near the parallel of latitude 42 degrees, is about 2600 miles. Their greatest length, from the northern boundary of Maine to Key West, in Florida, is about 1600 miles. Their mean length, from east to west, is about 1600 miles, and from north to south about 1300 miles. Their area, according to calculations founded on the report of the Commissioner of the General Land Office, for 1867, is 3,057,407 square miles, or 1,956,740,480 acres. This, however, is exclusive of the district of Alaska, in the extreme northwest of the continent, purchased from Russia, and comprising 577,390 square miles, or 369,529,600 acres. Including Alaska, the entire area of the United States and territories is 3,634,797 square miles.

Three mountain ranges, the Appalachian chain towards the east, the Rocky Mountains in the centre, and the Sierra Nevada in the west, divide the United States into four great regions. The first of these is the Atlantic slope, or all that portion lying east of the Appalachian or Alleghany range; the second, lying between the Appalachian and the Rocky Mountains, is known as the basin of the Mississippi and Missouri; the third is the country between the Rocky Mountains on the east and the Sierra Nevada on the west; the fourth extends from the Sierra Nevada to the Pacific Ocean, and is known as the Pacific slope.

The Appalachian or Alleghany mountains extend from the State of Mississippi northeast through the States of Alabama, Georgia, Tennessee, North Carolina, Virginia, Pennsylvania, New York, and Vermont, for about 1200 miles, at a variable distance of from 70 to 300 miles from the Atlantic coast, and with an average breadth of about 100 miles. Their mean height is from 2000 to 3000 feet, half of which consists in the elevation of the mountains over the adjacent plains, and the rest in the elevation of these plains above the sea. The White Mountains of New Hampshire, belonging to this chain, reach a height of 6226 feet, and the Black Mountain, of North Carolina, is 6732 feet above the level of the sea. The Rocky Mountains are a prolongation of the Mexican Cordillera, and some of their highest peaks attain to between 12,000 and 15,000 feet above the level of the sea. Their average altitude is about 8500 feet. The Sierra Nevada, or Snowy Mountains, are 10° to 12° west of the Rocky Mountains. Under different names, and with different altitudes, this range extends from the peninsula of lower California to Alaska, some of its passes being about 9000 feet, and its highest summits about 16,000 feet above the level of the sea.

The rivers of the United States are of great magnitude and importance. Of those flowing east and south the principal are the Mississippi and Missouri, which, with their tributaries, the Ohio, Arkansas, Red, Yellowstone, and Nebraska rivers, give to the interior an extent of inland navigation and a facility of communication unequalled on any other continent. Among the principal rivers flowing into the Atlantic, are the Hudson, Delaware, Susquehanna, Potomac, Savannah, and St. Johns. The Columbia, Sacramento, and Colorado flow into the Pacific Ocean. The Mississippi,

UNITED STATES.

Alabama, Colorado (of Texas), and Rio Grande (the last named forming the boundary between Texas and Mexico), empty into the Gulf of Mexico. The area of the water-basins has been estimated as follows: Rivers flowing into the Pacific, 644,040 square miles; into the Atlantic, 488,877 into the Gulf of Mexico, 1,683,325 square miles, of which 1,257,457 are drained by the Mississippi-Missouri rivers. The coastline on both oceans has a length of about 13,200 miles, excluding the numerous bays and sounds, besides 3600 miles on the great northern lakes.

The following table shows the area and population of each State and Territory:

STATES.	POPULATION IN 1870.	AREA IN SQUARE MILES.
Alabama,	996,993	50,722
Arkansas,	484,471	52,198
California,	560,247	188,981
Colorado,	39,864	104,000
Connecticut,	537,454	4,750
Delaware,	125,015	2,120
Florida,	187,748	58,268
Georgia,	1,184,109	58,000
Illinois,	2,539,891	55,410
Indiana,	1,680,637	33,809
Iowa,	1,194,020	55,045
Kansas,	364,399	81,318
Kentucky,	1,321,011	37,680
Louisiana,	726,915	41,346
Maine,	626,915	35,000
Maryland,	780,894	11,124
Massachusetts,	1,457,351	7,800
Michigan,	1,184,059	56,451
Minnesota,	439,706	83,531
Mississippi,	827,923	47,156
Missouri,	1,721,295	65,350
Nebraska,	122,993	75,995
Nevada,	42,491	104,125
New Hampshire,	318,300	9,480
New Jersey,	906,096	8,340
New York,	4,382,759	47,000
North Carolina,	1,071,361	50,704
Ohio,	2,665,260	39,964
Oregon,	90,923	95,274
Pennsylvania,	3,521,951	46,000
Rhode Island,	217,353	1,306
South Carolina,	705,666	34,000
Tennessee,	1,258,520	45,600
Texas,	818,579	274,356
Vermont,	339,551	10,212
Virginia,	1,225,163	38,348
West Virginia,	442,014	23,000
Wisconsin,	1,054,670	53,924
ORGANIZED TERRITORIES.		
Arizona,	9,658	113,916
Dakota,	14,181	150,932
District of Columbia,	131,700	64
Idaho,	14,999	86,294
Montana,	20,595	143,776
New Mexico,	91,874	121,291
Utah,	86,786	84,476
Washington,	23,955	69,994
Wyoming,	9,118	97,883
TERRITORIES NOT ORGANIZED.		
Alaska,		577,340
Indian,		68,991
Total,	38,558,351	3,602,424

In a country extending through 24° of latitude, and nearly 60 of longitude, the climate varies considerably. In the north, along the British frontier, the winter is very severe; during this season the snow is sufficiently abundant in New England to admit the use of sleighs, and the ice-on the rivers strong enough to bear the passage of horses and wagons. As far south as Pennsylvania and New Jersey, the thermometer falls, in winter, below zero; rising, in summer, to nearly 100° Fahr. Along the Atlantic coast, between latitude 41° and 45° , the climate is colder in winter and warmer in summer, by nearly 10° , than in those parts of Europe which lie under the same parallels. Snow, however, rarely falls south of latitude 30° ; nor is it frequently seen south of the Potomac, except on mountains. The mean annual temperature of Albany is about 49° ; of New York and Cincinnati, about 51° ; of Philadelphia, 54° ; of Natchez, 65° , and of Cantonment Brooke, in Florida, 72° . The temperature along the Pacific is much higher than in corresponding latitudes on the eastern coast.

The Mississippi valley is very fertile. In the Eastern States there still exist large forests of valuable timber, such as beech, birch, maple, oak, pine, spruce, elm, ash, walnut; and, in the South, live-oak, water-oak, magnolia, palmetto, tulip tree, cypress, etc., remnants of the wooded region which formerly extended over the whole Atlantic slope, but into which great inroads have been made by advancing civilization. Apples, pears, cherries, and plums flourish in the North; peaches, melons, and grapes in the Middle States; pineapples, pomegranates, figs, almonds, and oranges in the South. Maize is grown from Maine to Louisiana, and wheat throughout the Union; tobacco as far north as Connecticut, and in the Western States south of Ohio. There is not much cotton raised north of 37° , though it grows as far north as 39° . Rice is cultivated in South Carolina, Georgia, Louisiana, and as far north as St. Louis, Mo. The sugar-cane grows as high as 33° , but does not thoroughly succeed beyond 31° 30° . The vine and mulberry tree grow in various parts of the Union; oats, rye, and barley throughout the North and the mountainous parts of the South; and hemp, flax, and hops in the Western and Middle States. The following figures, taken from the report of the ninth census (1870), will convey an idea of the extent of the annual productions of agriculture:

Spring wheat,	112,549,733	bushels
Winter wheat,	175,195,893	"
Rye,	16,918,795	"
Indian corn,	760,944,549	"
Oats,	282,107,157	"
Barley,	29,761,305	"
Buckwheat,	9,821,721	"
Rice,	73,635,021	pounds
Tobacco,	202,735,341	"
Cotton,	3,011,996	bales
Peas and beans,	5,746,027	bushels
Irish potatoes,	143,337,473	"
Sweet potatoes,	21,709,824	"
Wine,	3,092,369	gallons
Hay,	27,316,048	tons
Clover seed,	639,657	bushels
Grass seed,	583,188	"
Sugar (from cane),	87,043	hds
Maple sugar,	28,443,645	pounds
Molasses,	23,564,469	gallons
Dairy Products.—Butter,	514,092,683	pounds
Cheese,	53,492,153	"
Milk sold,	235,500,599	gallons
Wool,	100,102,387	pounds
Wax,	631,129	"
Honey,	14,702,815	"

The same report gives the cash value of farms in the United States at \$9,262,803,861; of farming implements and machinery, at \$336,878,429; live stock, at \$1,525,276,457.

UNITED STATES.

Total estimated value of all farm productions, including betterments and additions to stock, \$2,447,538,658. Value of orchard products, \$47,335,189; products of market gardening, \$26,719,229.

There were, at the same time, 8,690,219 horses, 28,074,582 cattle, 28,477,951 sheep, and 25,184,540 hogs.

Except a few small isolated fields, all the bituminous coal in the United States lies west of the Appalachian chain, where a vast series of coal beds stretch from the mountains west through Ohio, Indiana, and Illinois, parts of Kentucky and Alabama, into the State of Missouri, and as far as two hundred miles beyond the Mississippi. Anthracite coal is found most extensively in Pennsylvania; also in Western Virginia and the eastern portion of Ohio and Illinois. The oil-wells of northwestern Pennsylvania contain apparently inexhaustible stores of mineral oil or petroleum. Numerous salt-springs exist in New York, Virginia, Pennsylvania, and the Western States. Iron is distributed most abundantly through the coal measures in Pennsylvania, Ohio, Virginia, and Tennessee, the ore containing from 25 to 33 per cent. of metal. Iron ore also abounds in the Northwestern States; and that found in one part of Vermont yields 78 per cent. of iron. A large proportion of the ore found in this part of the Union is magnetic. Lead is found in various places, but more especially in Missouri, Wisconsin, and Illinois. In some parts of Wisconsin this ore yields from 60 to 70 per cent. of lead. Large deposits of copper have been found in Michigan, in the Lake Superior region. Gold, in large quantities, and silver, have been found in the States and Territories west of the Rocky Mountains. Gold has also been found in Virginia, the Carolinas, Georgia, and Tennessee. Quicksilver, zinc, manganese, with lime and building stone, are the other chief mineral products. The following figures are from the Statistics of Mining, Table VIII, Report of the Ninth Census (1870):

	VALUE OF PRODUCTS.
Anthracite coal,	\$38,495,745
Bituminous coal,	35,029,247
Copper,	5,201,312
Gold, placer mined,	7,266,613
" hydraulic mined,	2,508,531
Quartz, gold and silver bearing,	16,677,508
Iron ore,	13,204,138
Lead,	736,004
Petroleum,	19,304,224

The mechanical and manufacturing establishments of the Union, in 1870, numbered 252,148, using steam-engines of 1,215,711 horse-power and 1,130,431 horse-power in water-wheels, and employing 2,053,996 hands. The amount of capital invested is \$2,118,208,769; annual wages, \$775,584,343; material used, \$2,488,427,242, and the total products \$4,232,325,442. The chief manufacturing States are Pennsylvania, New York, Massachusetts, Ohio, Illinois, New Jersey, Connecticut, and Rhode Island.

The importations for the year ending June 30th, 1875, were:

Merchandise,	\$533,005,536
Gold and silver,	20,894,217
Total,	\$553,899,753

Foreign exports, merchandise,	\$14,157,611
Gold and silver,	8,275,013
Total,	\$22,432,624

The gold value of domestic exports, during the same period, was \$583,141,229.

In the length of miles of railway open to traffic, the United States exceeds all other nations, although in the proportion of miles of railway to miles of area, it ranks below some of the smaller and more densely populated states of Europe. The following figures, from Poor's "Railway Manual," illustrate the growth of the railway system in the United States:

In 1830, there were	23	miles in operation.
" 1840, " "	2,818	" " "
" 1850, " "	9,021	" " "
" 1860, " "	30,635	" " "
" 1870, " "	52,898	" " "
" 1874, " "	72,623	" " "

During the year 1874, the gross earnings were \$520,466,016, of which \$379,466,935 was for freight, and \$140,999,081 for passengers. Net earnings, \$189,570,958; dividends paid, \$67,042,942.

The government of the United States is, by the Constitution, intrusted to three separate authorities, the executive, the legislative, and the judicial. The executive power is vested in a President, who is elected every four years, and is eligible for re-election. The legislative power is vested in two houses, the Senate and the House of Representatives, the President having a veto power, which may be overcome by a two-thirds vote of both houses. Two senators from each State are elected by the legislature thereof, for the term of six years; and representatives are chosen in each State, by popular vote, for two years. The number of Representatives for each State is allotted in proportion to its population, one for each 135,239.

The supreme judicial authority is vested in a Chief Justice and eight Associate Justices, who are appointed for life by the President, by and with the consent of the Senate.

The government of each State is on the same model as that of the general government. There is a governor chosen by popular vote, and a State legislature, similarly chosen, composed of two houses. Each State also has a constitution which prescribes its form of government.

The following statistics apply to the army and navy of the United States in 1875: The army consisted, July 1st, 1875, of 2204 commissioned officers, and 25,000 enlisted men; the navy of 175 vessels, with an armament of 1282 guns, 8500 men, 1254 commissioned, and 490 non-commissioned officers on the active list.

The postal service is conducted by the general government. During the fiscal year ending June 30th, 1875, it carried 601,921,520 letters, 117,215,850 stamped wrappers, 13,956,750 newspapers, and 31,094,500 postal cards. The money orders amounted to \$75,425,854.

The telegraph lines belong to private corporations. Their total length, in January, 1875, was 75,000 miles; length of wires, 165,000 miles; number of offices, 6172; number of messages transmitted during the year 1874, 13,700,000.

Education is conducted by the separate States. In general the primary schools are supported by a property tax, and nearly all the States have school funds in addition, the income of which is distributed among the towns in proportion to the number of pupils educated. The gifts with which, during late years, private individuals have endowed institutions of learning, prove a growing appreciation of the claims of the higher education.

The following statistics are collated from the report of the ninth census, 1870:

PUBLIC SCHOOLS.

NUMBER OF SCHOOLS.	TEACHERS EMPLOYED.			PUPILS IN ATTENDANCE.		
	MALE.	FEMALE.	TOTAL.	MALE.	FEMALE.	TOTAL.
125,059	74,174	109,024	183,198	3,120,052	3,108,008	6,228,060

UNITED STATES.

The schools "Not Public" are arranged under two headings: "Classical, Professional, and Technical," and "Other Schools."

"NOT PUBLIC" SCHOOLS (Classical, Professional, and Technical).

NUMBER.	TEACHERS.			PUPILS.		
	MALE.	FEMALE.	TOTAL.	MALE.	FEMALE.	TOTAL.
Classical, etc., 2,545	7,766	5,001	12,767	148,810	106,380	255,190
Other Schools, 14,025	11,389	13,688	25,077	353,134	373,554	726,688

INCOME.

PUBLIC.	NOT PUBLIC.		
	CLASSICAL, PROFESSIONAL, AND TECHNICAL.	OTHERS.	
From Taxation of Public Funds,	\$58,855.507	\$2,320,250	\$570,282
" Endowments,	144,533	3,356,003	163,249
" Other Sources, including Tuition, . .	5,030,633	11,999,654	12,962,615
	\$64,030,673	\$17,675,907	\$13,696,146

The total number of libraries returned was 163,353, containing 44,539,184 volumes. Of these, 107,673 were private libraries, containing 25,571,503 volumes. In the opinion of the superintendent of the census, these results are "manifestly far below the truth."

The newspaper and periodical press comprised, in 1875, 7870 publications, divided as follows: Daily, 1718; tri-weekly, 80; semi-weekly, 107; weekly, 5957; bi-weekly, 24; semi-monthly, 106; monthly, 802; bi-monthly, 8; quarterly, 68.

"STAR" ALPACA BRAIDS.

S. B. & M. FLEISHER,
MANUFACTURERS, PHILADELPHIA.



WHY ARE THEY THE BEST?

ANSWER:

As a strong and conclusive evidence of the superior quality of the "STAR" ALPACA BRAIDS, is the preference that is given them over all competitive makes.

Having been subjected to rigid tests for the past ten years, and wherever introduced, they at once became the desired article.

They are made of the very best materials, with the greatest care and efficient workmanship, and upon the most improved machinery.

With these appliances, and a determination to go ahead, the manufacturers have made the "STAR" Alpaca Braids the most popular Braid of the country.

First Prize, Silver Medal, Franklin Institute, Philada., 1874.

First Prize, Silver Medal, Maryland Institute, Baltimore, 1874.

First Prize, Silver Medal, Industrial Exposition, Cinn., 1875.

For Sewing Machines and Hand Sewing

USE

STRONG, SMOOTH,
AND ELASTIC.



THIS
COTTON
IS
STRONG,
SMOOTH,
AND
ELASTIC.

(WOUND ON WHITE SPOOLS.)

GEORGE A. CLARK, Sole Agent.

IT IS

The Best and Most Popular Thread of the age.

GEORGE A. CLARK & BRO.,

SOLE AGENTS IN AMERICA,

Nos. 337 and 339 Canal Street, New York.

Sub-agency, 8 Strawberry St., Philadelphia.

CHENEY BROTHERS,

Silk Manufacturers,

Mills at Hartford & South Manchester

CONNECTICUT.

SALESROOMS, { 477 BROOME ST., NEW YORK,
{ 19 FRANKLIN ST., BOSTON.

GROS GRAIN DRESS SILKS in Black and Colors of all Shades.
FIGURED AND TWILLED SILKS for the Millinery Trade.

FLORENTINES AND MARCELLINES, of all colors, qualities, and
widths, for the use of Manufacturers of Parasols, Hats, Caps,
and Furs.

SILK HANDKERCHIEFS AND MUFFLERS, Plain or with Woven
or Printed Borders.

SILK FLAGS of various sizes, from 7 x 10 to 30 x 48 inches, hemmed
and boxed in dozens for the trade.

BONNET RIBBONS, Black and Colored, of all widths and shades.
SASH AND BELT RIBBONS.

MACHINE TWIST AND SEWING SILK.

ORGANZINES, TRAMS, AND FINE PATENT SPUN SILKS, for
Silk Mixture, Cassimeres, and for all other fabrics in which Silk
is used.

Particular attention given to orders for special
kinds of Silk used by manufacturers.

Specimens of all the above-mentioned fabrics and
threads can be seen in the show-case of Cheney Brothers,
in the American Silk Department of the Centennial
Exhibition in the Main Building.

UNITED STATES.

Minerals, Ores, Stone, Mining Products.

- Minerals, Ores, Stone, Mining Products.**
- 1 Cambria Iron and Steel Co., Johnstown, Pa. T 65. 100
 - a Carbonate, fossil, and hematite ores from Johnstown, Frankstown, Marklesburg, Yellow Creek, Levant, Henrietta, and Springfield mines; specular, magnetic, red hematite, Lake Superior, and Lake Champlain ores; manganiferous Iron Mountain ores. 100
 - b B, C, D, and E, coal from Johnstown and Bennington mines; Belgian, pit, and oven coke. 100
 - c Lime flux from Birmingham, Hollidaysburg, Henrietta, and Ganister mines. 103
 - 2 Wharton, Joseph, Camden, N. J.—Nickel ores. T 63. 100
 - 3 Sharwood, Wm., Philadelphia, Pa.—Suite of minerals and salts, illustrating the chemistry and mineralogy of cerium, lanthanum, and didymium. T 71. 100
 - 4 Hatch, John, San Francisco, Cal.—Minerals of the Pacific states and territories, Mexico, Central and South America, China, Japan, etc. T 67. 100
 - 5 Barton, Chas., Philadelphia, Pa.—Ores from "Blazing Star" silver mine, Colorado. T 71. 100
 - 6 Adams, J. Howe, Philadelphia, Pa.—Ore from "Blue Jacket" silver mine, Montana district; Colorado. T 71. 100
 - 7 Benton, Caroline C., Philadelphia, Pa.—Iron ores from St. Lawrence and Lewis counties, N. Y. T 71. 100
 - 8 Foote, A. E., Philadelphia, Pa.—Collection of minerals; elementary collection of minerals for students. T 71. 100
 - 9 Cleveland Rolling Mill Co., Cleveland, Ohio.—Ores. T 60. 100
 - 10 Holland, James M., Denver, Col.—Ores of gold, silver, lead, and tellurium, mined in Colorado. T 69. 100
 - 11 Wyoming Historical and Geological Society, Wilkesbarre, Pa.—Fossils from the anthracite coal measures of Wyoming Valley, Pa. T 70. 100
 - 12 Cook, Isaac, St. Louis, Mo.—Lead ores from Washington county, Mo. T 68. 100
 - 13 Port Henry Iron Ore Co., New York, N. Y.—Magnetic iron ores. T 71. 100
 - 14 Witherbee, Sherman, & Co., Port Henry, N. Y.—Magnetic iron ore. T 71. 100
 - 15 Black Band Iron Co., Marietta, Ohio.—Black band, red hematite, and other iron ores. V 63. 100
 - 16 Brown & Co., Wayne Iron and Steel Works, Pittsburgh, Pa.—Ores. T 62. 100
 - 17 Lucy Furnace Co., Pittsburgh, Pa.—Iron ores. T 66. 100
 - 18 Providence Franklin Society, Providence, R. I.—Minerals and geological specimens from Rhode Island. T 70. 100
 - 19 Blanchard & Lippitt, Hartford, Conn.—Brown hematite iron ore from Lakeville, Conn. T 70. 100
 - 20 Hussey & Howe Mining Co., Plattsburgh, N. Y.—Blue magnetic iron ore (martite); black magnetic iron ore. T 69. 100
 - 21 Alexander, John S., Philadelphia, Pa.—Collection of minerals. T 70. 100
 - 22 Passaic Zinc Co., Passaic, N. J.—Zinc ores. T 63. 100
 - 23 Magnetic Iron Co., Philadelphia, Pa.—Bessemer ores; minerals from Carter county, Tenn. T 69. 100
 - 24 Crab Orchard Iron Co., Philadelphia, Pa.—Magnetic Bessemer iron ores from Crab Orchard, Tenn. T 69. 100
 - 25 Herr, Jos. C., Philadelphia, Pa.—Hematite iron ores, manganese, and baryta from French Broad River, Cocke county, Tenn. T 69. 100
 - 26 Davis, O. W., jr., Bangor, Maine.—Katahdin ores (limonite). T 69. 100
 - 27 Thomas Iron Co., Hokendauqua, Pa.—Iron ore. T 64. 100
 - 28 Lehigh Zinc Co., Bethlehem, Pa.—Zinc ores and minerals from zinc mines. T 64. 100
 - 29 Russell, Jesse, Boston, Mass.—Iron ore. T 68. 100
 - 30 Stockbridge Iron Co., New Bedford, Mass.—Iron ore from West Stockbridge and Richmond, Mass. T 70. 100
 - 31 Dexter & Co., New York, N. Y.—Mica from North Carolina. T 72. 100
 - 32 Murray Mining Co., Detroit, Mich.—Native copper, etc. V 67. 100
 - 33 Shalter, R. M., Carrick Furnace, Franklin county, Pa.—Iron ore. T 63. 100
 - 34 Shelley Iron Co., Shelley Iron Works, Ala.—Iron ores. T 71. 100
 - 35 Rockhill Iron and Coal Co., Philadelphia, Pa.—Iron ores. T 72. 100
 - 36 Tecumseh Iron Co., Tecumseh, Ala.—Iron ore. T 70. 100
 - 37 New River Railroad, Mining, and Manufacturing Co. of Virginia, Philadelphia, Pa.—Iron ores and other minerals. T 50. 100

Minerals, Ores, Stone, Mining Products.

- 38** Lackawanna Iron and Coal Co., Scranton, Pa.—Iron ores. T 64. 100
39 Lee, Alfred S., Richmond, Va.—Manganese and iron ore and pure silica from Amherst county, Va. T 64. 100
40 Lake Superior Iron Co., Marquette county, Mich.—Iron ore. T 70. 100
41 Kentucky Geological Survey.—Collection illustrating the geology and mineral resources of Kentucky. V 70. 100
42 Allen, Oliver, Mumford, N. Y.—Petrified wood, leaves, ferns, etc., found on his premises. T 72. 100
43 Vesuvius Furnace, Etna Iron Works, Ironton, Ohio.—Iron ore. T 68. 100
44 Etna Furnace, Etna Iron Co., Hanging Rock, Ohio.—Iron ore. T 68. 100
45 Blanche Furnace, Etna Iron Works, Ironton, Ohio.—Iron ores. T 68. 100
46 Hecla Iron and Mining Co., Ironton, Ohio.—Iron ores. T 68. 100
47 Monitor Furnace Co., Ironton, Ohio.—Iron ores. T 68. 100
48 Grant Furnace, W. D. Kelley & Sons, Ironton, Ohio.—Iron ores. T 68. 100
49 Center Furnace, W. D. Kelley & Sons, Ironton, Ohio.—Iron ores. T 68. 100
50 Howard Furnace, Charcoal Iron Co., Ironton, Ohio.—Iron ores. T 68. 100
51 Buckhara Furnace, Charcoal Iron Co., Ironton, Ohio.—Iron ores. T 68. 100
52 Olive Furnace, Campbell, McGugin, & Co., Ironton, Ohio.—Iron ores. T 68. 100
53 Lawrence Furnace Co., Ironton, Ohio.—Iron ores. T 68. 100
54 Pine Grove Furnace, Means, Kyle, & Co., Hanging Rock, Ohio.—Iron ores. T 68. 100
55 Ohio Furnace, Means, Kyle, & Co., Hanging Rock, Ohio.—Iron ores. T 68. 100
56 Washington Furnace, Union Iron Co., Portsmouth, Ohio.—Iron ores. T 68. 100
57 Scioto Furnace, L. C. Robinson & Co., Portsmouth, Ohio.—Iron ores. T 68. 100
58 Bloom Furnace, John Paul & Co., Portsmouth, Ohio.—Iron ores. T 68. 100
59 Clinton Furnace, W. I. Bell, Wheelersburg, Ohio.—Iron ores. T 68. 100
60 Buckeye Furnace Co., Jackson, Ohio.—Iron ores. T 68. 100
61 Cambria Furnace, D. Lewis & Co., Sammonville, Ohio.—Iron ores. T 68. 100
62 Jackson Furnace, L. P. N. Smith's Heirs, Sciotoville, Ohio.—Iron ores. T 68. 100
63 Jefferson Furnace Co., Oak Hill, Ohio.—Iron ores. T 68. 100
64 Orange Furnace, Orange Iron Co., Jackson, Ohio.—Iron ores. T 68. 100
65 Star Furnace Co., Jackson, Ohio.—Iron ores. T 68. 100
66 Huron Furnace, Huron Iron Co., Jackson, Ohio.—Iron ores. T 68. 100
67 Tropic Furnace Co., Jackson, Ohio.—Iron ores. T 68. 100
68 Globe Furnace, Globe Iron Co., Jackson, Ohio.—Iron ores. T 68. 100
- 69** Fulton Furnace, Globe Iron Co., Jackson, Ohio.—Iron ores. T 68. 100
70 Wellston Twin Furnaces, Wellston Coal and Iron Co., Wellston, Ohio.—Iron ores. T 68. 100
71 Lincoln Furnace, I. M. McGhee's Estate, Rud's Mills, Ohio.—Iron ores. T 68. 100
72 Richland Furnace Co., Richland P. O., Ohio.—Iron ores. T 68. 100
73 Eagle Furnace, L. C. Damarin & Co., Rud's Mills, Ohio.—Iron ores. T 68. 100
74 Hope Furnace, L. C. Damarin & Co., Portsmouth, Ohio.—Iron ores. T 68. 100
75 Hamden Furnace, L. C. Damarin & Co., Portsmouth, Ohio.—Iron ores. T 68. 100
76 Vinton Furnace, Bancroft, Rader, & Co., Vinton Station, Ohio.—Iron ores. 100
77 Keystone Furnace Co., Portsmouth, Ohio.—Iron ores. T 68. 100
78 Monroe Furnace, Union Iron Co., Portsmouth, Ohio.—Iron ores. T 68. 100
79 Latrobe Furnace, Bundy & Cobb, Berlin Cross Roads, Ohio.—Iron ores. T 68. 100
80 Logan Furnace Co., Logan county, Ohio.—Iron ores. T 68. 100
81 Union Furnace, Brooks & Hueston, Haydensville, Ohio.—Iron ores. T 68. 100
82 Mount Savage Furnace, Lexington and Carter county Mining and Manufacturing Co., Lexington, Ky.—Iron ores. T 68. 100
83 Buffalo Furnace, Culbertson, Earhart, & Co., Greenupsburg, Ky.—Iron ores. T 68. 100
84 Hunnewell Furnace, Eastern Kentucky Railway Co., Riverton, Ky.—Iron ores. T 68. 100
85 Pennsylvania Furnace, Eastern Kentucky Railway Co., Riverton, Ky.—Iron ores. T 68. 100
86 Charlotte Furnace Co., Riverton, Ky.—Iron ores. T 68. 100
87 Laurel Furnace, Robt. Scott & Co., Riverton, Ky.—Iron ores. T 68. 100
88 Gallia Furnace, Norton, Campbell, & Co., Portsmouth, Ohio.—Iron ores. T 68. 100
89 Raccoon Furnace, Raccoon Mining and Manufacturing Co., Riverton, Ky.—Iron ores. T 68. 100
90 Tygart's Valley Mining Co., Riverton, Ky.—Section of iron ore. T 68. 100
91 Bellefonte Furnace, Means, Russell, & Means, Ashland, Ky.—Iron ores. T 68. 100
92 Buenavista Furnace, Means & Co., Ashland, Ky.—Iron ores. T 68. 100
93 Trigg Furnace, D. Hillman & Sons, Empire Iron Works, Ky.—Iron ores. T 68. 100
94 Center Furnace, D. Hillman & Sons, Empire Iron Works, Ky.—Iron ores. T 68. 100
95 Shaw, Thomas Ogg, Providence, R. I.—Mineral from Wyoming Territory. T 50. 100
96 Hanging Rock Iron Region, Ironton, Ohio.—Iron ores. T 68. 100

UNITED STATES.

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Minerals, Ores, Stone, Mining Products.

97 Traber & Aubery, Cincinnati, Ohio.		
—Iron ores from twenty-five states and territories.	T 68.	
a Iron ores.	100	
b Fuels.	101	
98 State of Alabama.—Specimens of the minerals of the State.	V 55.	100
99 Cooper, Hewitt, & Co., New York,	N. Y.	T 66.
a Iron ores.	100	
b Fuels.	101	
100 Ohio Coal Co., Marietta, Ohio.	V 63.	
a Coal.	100	
b Coke.	101	
101 Rhodes & Co., Cleveland, Ohio.	T 71.	
a Lake Superior iron ores.	100	
b Massillon Ohio coals.	101	
102 Poplar Creek Mineral Railroad Co., Philadelphia, Pa.	T 69.	
a Iron ores, etc., from Anderson county, Tenn.	100	
b Coal from Anderson county, Tenn.	101	
103 Durham Iron Co., Riegelsville, Pa.	T 64.	
a Ores.	100	
b Fuel.	101	
104 Glendon Iron Co., Easton, Pa.	T 64.	
a Iron ores.	100	
b Fuel.	101	
105 Uhler, Peter, Easton, Pa.	T 64.	
a Ores.	100	
b Fuel.	101	
106 Keystone Iron Co., Easton, Pa.	T 64.	
a Ores.	100	
b Fuel.	101	
107 Northampton Furnace, worked by the Bethlehem Iron Co., Bethlehem, Pa.	T 64.	
a Iron ores.	100	
b Fuel.	101	
108 Lehigh Iron Co., Allentown, Pa.	T 64.	
a Iron ore.	100	
b Coal.	101	
109 Emmaus Iron Co., Allentown, Pa.	T 64.	
a Iron ore.	100	
b Fuel.	101	
110 Millstown Iron Co., Allentown, Pa.	T 64.	
a Iron ore.	100	
b Fuel.	101	
111 Allentown Rolling Mill Co., Allentown, Pa.	T 64.	
a Ores.	100	
b Fuel.	101	
112 Carbon Iron Co., Parryville, Pa.	T 64.	
a Iron ore.	100	
b Fuel.	101	
113 Philadelphia and Reading Coal and Iron Co., Philadelphia, Pa.	T 72.	
a Iron ores.	100	
b Coals for smelting and steam purposes.	101	
114 Grand Tower Mining, Manufacturing, and Transportation Co., Grand Tower, Ill.	T 68.	
a Ores.	100	
b Fuel.	101	
115 Ironton Furnace Iron and Steel Co., Ironton, Ohio.	T 68.	
a Iron ores.	100	
b Bituminous coal.	101	
116 Belfont Furnace, Belfont Iron Works, Ironton, Ohio.	T 68.	
a Iron ores.	100	
b Bituminous coals.	101	
117 Ophir Furnace Co., Jackson, Ohio.	T 68.	
a Iron ores.	100	
b Jackson county stone coal.	101	
118 Norton Iron Works, Ashland, Ky.	T 68.	
a Iron ores.	100	
b Coals and coke.	101	
119 Ashland Furnace, Lexington and Big Sandy Railroad Co., Ashland, Ky.	T 68.	
a Iron ores.	100	
b Coals.	101	
120 Powell, Robert Hare, & Co., Philadelphia, Pa.	X 67.	
a Iron ore from Huntingdon county, Pa.	100	
b Semi-bituminous coal from Powellton mines.	101	
121 Union Iron Co. of Buffalo, Buffalo, N. Y.	T 64.	
a Iron ores.	100	
b Limestone.	103	
122 Woodstock Iron Co., Anniston, Ala.	T 63.	
a Iron and manganese ores.	100	
b Limestone.	103	
123 Saxon Iron Co., Hellertown, Pa.	T 64.	
a Hematite and magnetic ore.	100	
b Limestone.	103	
124 Andrews, Hitchcock, & Co., Cleveland, Ohio.	V 61 to 64.	
a Lake Superior iron ores.	100	
b Brier Hill coal.	101	
c Limestone.	103	
125 Duncan, John W., Philadelphia, Pa.	T 72.	
a Iron ores.	100	
b Clays.	104	
126 Penn Steel and Iron Co., Clintonville, N. Y.	T 63.	
a Iron ore.	100	
b Graphite ore.	105	
127 Thomas, W. H. B., Mount Holly, N. J.	T 71.	
a Minerals.	100	
b Marls for fertilizing purposes; mineral waters from New Jersey.	107	
128 Myers, A. J., Shenandoah Alum Springs, Va.	T 67.	
a Minerals, ores.	100	
b Mineral spring waters, chalybeate, iron, and sulphur waters.	107	
129 Crane Iron Co., Catawauqua, Pa.	T 64.	
a Hematite and magnetic iron ores.	100	
b Fuel.	101	
c Limestone.	103	
130 Carter, W. T., & Co., Redington, Pa.	T 64.	
a Iron ores.	100	
b Coal.	101	
c Limestone.	103	
131 Lehigh Valley Iron Co., Copley, Pa.	T 64.	
a Hematite and magnetic ore.	100	
b Fuel.	101	
c Limestone.	103	
132 Riverside Iron Works, Wheeling, W. Va.	T 64.	
a Iron ore.	100	
b Coke.	101	
c Limestone.	103	

MINING AND METALLURGY.

Minerals, Ores, Stone, Mining Products.

- 133 Alice Furnace, Etna Iron Works,** Hanging Rock, Ohio. T 68.
a Iron ores. 100
b Bituminous coal and coke. 101
c Limestone. 103
- 134 Hanging Rock Iron Region Furnaces,** Charles Campbell, Commissioner, Ironton, Ohio. T 69.
a Iron ores. 100
b Cinders, bituminous coals. 101
c Limestone. 103
d Fire clay. 104
- 135 Tuscarawas Coal and Iron Co.,** Cleveland, Ohio. T 71.
a Iron ores. 100
b Coal. 101
c Limestone. 103
d Sand, fire clay. 104
- 136 Mount Vernon Furnace, Hiram** Campbell & Sons, Ironton, Ohio. T 68.
a Iron ores. 100
b Bituminous coals. 101
c Limestone. 103
d Fire clay. 104
- 137 Milton Furnace and Coal Co.,** Wellston, Ohio. T 68.
a Iron ores. 100
b Coals. 101
c Limestone. 103
d Fire clay. 104
- 138 Keim, Beverley R., Kansas City,** Kansas. B 67.
a Minerals, fossils, and petrifications from line of Kansas Pacific Railroad. 100
b Birds from line of Kansas Pacific Railroad. 635
c Animals from line of Kansas Pacific Railroad. 637
- 139 State of Wisconsin.** V 60.
a Minerals, soils, etc. 100
b Building stone. 102
c Sands, gravel. 104
- 140 State of Ohio (by F. W. Green).** W 63.
a Minerals, ores. 100
b Stone. 102
c Clay, etc. 104
- 141 State of New Jersey (by Geo. H. Cook, State Geologist, New Brunswick, N. J.).** T 70.
a Iron, zinc, and copper ores; minerals, geological suite. 100
b Building stones. 102
c Clays and sands. 104
d Fertilizers. 107
- 142 State of Indiana (by E. T. Cox, State Geologist).** V 57.
a Hydrated brown oxide iron ores. 100
b Bituminous and cannel coal from various mines. 101
c Marble of various colors, oölitic building stone, limestone, sandstone, limestone flags, hydraulic stone. 102
d Hydraulic cement, caustic lime. 103
e Fire, white porcelain, and potters' clay; sand. 104
- 143 State of Michigan (Jay A. Hubbell, Houghton, Mich., Superintendent of Mineral Department).** V 67.
a Minerals, ores, geological collections, etc. 100
b Bituminous and cannel coal. 101
c Hewn, sawed, and polished building stone, marbles, and slates. 102
d Lime and cement. 103
e Clays and silex for glass manufacturers; sandstone, etc. 104
f Mineral waters, natural brines, gypsum, marls, etc. 107
- 144 State of Delaware (by J. P. Comegys, Dover, Del.).** W 65.
a Iron ore. 100
b Building stone. 102
c Clays. 104
d Natural woods. 600
e Fruits. 610
f Cereals. 620
g Peas, beans, potatoes, turnips. 621
- 145 State of Missouri (collective exhibit, by Thos. Allen, President State Board Centennial Managers, St. Louis, Mo.).** V 65.
a Iron, lead, zinc, copper, and nickel ores, barytes, feldspar, and soils. 100
b Coal. 101
c Stone. 102
d Clays, sand, ochres, and kaolin. 104
e Tripoli. 106
f Peanuts. 605
g Wheat, rye, oats, barley, and corn. 620
h White beans and black-eyed peas. 621
i Millet. 624
j Cotton. 665
k Flax and hemp. 666
l Wool. 667
m Silk. 668
- 146 Cochran, John M., & Co., Bradford, Pa.—Connellsville** bituminous coal and coke. T 56. 101
- 147 Philadelphia and Reading Coal and Iron Co., Philadelphia, Pa.—Anthracite coal.** Y 56. 101
- 148 Kittanning Coal Co., Philadelphia, Pa.—Section of coal-vein.** Y 56. 101
- 149 Westmoreland Coal Co., Philadelphia, Pa.—Bituminous coal.** Y 58. 101
- 150 Penn Gas Coal Co., Westmoreland county, Pa.—Section of bituminous coal-vein.** Y 56. 101
- 151 Van Wickle, Stout, & Co., New York, N. Y.—Anthracite coal from Ebervale, Pa.** W 53. 101
- 152 McClintock, I. R., Philadelphia, Pa.—Products of asphaltum by the McClintock process.** T 56. 101
- 153 Linderman, G. B., Bethlehem, Pa.—Anthracite coal.** T 64. 101
- 154 Newton, Jotham, New York, N. Y.—Composition fuel made of coal dust.** T 57. 101
- 155 Rockhill Iron and Coal Co., Philadelphia, Pa.—Semi-anthracite coal; coke.** T 72. 101
- 156 Anthracite Fuel Co., Rondout, N. Y.—Pressed coal from the culm of anthracite.** Y 54. 101
- 157 Hickory Coal Co., Pottsville, Pa.—Samples of coal.** W 50. 101
- 158 Harleigh Coal Co., Philadelphia, Pa.—Samples of coal.** W 51. 101
- 159 Excelsior Coal Mining Co., Philadelphia, Pa.—Samples of coal.** W 52. 101
- 160 Campbell, Tucker, & Co., Philadelphia, Pa.—Anthracite coal from the Wm. Penn colliery. (Outside.)** 101
- 161 Pardee, A. & Co., Hazleton, Pa.—Section of coal vein from lands of Lehigh Valley Railroad Co., Hazleton, Pa. (Outside.)** 101
- 162 Blauvelt, Jas. C., Marietta, Ohio.—Bituminous coal from Marietta Run, Ohio.** V 61 to 64. 101
- 163 Lexington and Carter county Mining and Manufacturing Co., Lexington, Ky.—Section of bituminous coal.** T 68. 101

Minerals, Ores, Stone, Mining Products.

- 164 Keys, John, Brockwayville, Pa.—** Lump of bituminous coal. T 56. 101
- 165 Eastern Kentucky Railway, River-**ton, Ky.—Sections of cannel and bitumi-nous coals. T 68. 101
- 166 Dysart & Co., Philadelphia, Pa.—** Bituminous white ash coal from Cambria county, Pa. T 57. 101
- 167 Kimes, J. B., & Co., Philadelphia,** Pa.—Slate mantels, house decorations, building material. T 51. 102
- 168 Williams Marble and Slate Mantel** Co., Philadelphia, Pa.—Marble and mar-blized slate mantels, etc. T 48. 102
- 169 Wilson & Miller, Philadelphia, Pa.**—Marbleized slate mantels, etc.; plain slate work. T 50. 102
- 170 Bys, E. Mortimer, Wilmington,** Del.—Ornamental work made from Mary-land greenstone, etc. T 70. 102
- 171 Hayes, Coulter, & Co., Philadel-**phia, Pa.—Slate mantels with grates. T 59. 102
- 172 Dougherty, E. D., Philadelphia,** Pa.—Blocks of Dougherty marble of Ten-nessee, rough and polished; pedestals, slabs, etc. T 49. 102
- 173 Columbian Marble Co., Rutland,** Vt.—Marble wainscoting, pedestal, tiling, etc. T 54. 102
- 174 Reitz & Bode, Portsmouth, Ohio.**—Blue freestone and brownstone. T 53. 102
- 175 Wagner, John, Cleveland, Ohio.**—Sawed Euclid bluestone, sandstone. T 51. 102
- 176 Gurney, H. D., St. Paul, Minn.**—Minnesota granite—red, white, and blue. T 53. 102
- 177 Forest City Stone Co., Cleveland,** Ohio.—Sawed stone flagging. T 54. 102
- 178 Mallory, Jas. E., New York, N. Y.**—Marble from Snowflake marble quarry, Pleasantville, N. Y. (*Outside.*) 102
- 179 Martin, H. F., Allentown, Pa.—**Slate mantels and blackboards, school slates, etc. T 50. 102
- 180 St. Cloud Granite Quarrying and** Manufacturing Co., St. Paul, Minn.—Red and white granite. T 54. 102
- 181 Allen, James T., & Co., Philadel-**phia, Pa.—Scagliola and Marazzo marble for interior decoration. T 54. 102
- 182 Fauchere, A. L., & Co.—New York,** N. Y.—Marble mantels, etc. T 50. 102
- 183 Williams, Chas., St. Louis, Mo.**—Tennessee, Italian, and Missouri marble work; jewel box. T 53. 102
- 184 Denton, Drake W., Philadelphia,** Pa.—Excelsior slate roofing. T 56. 102
- 185 Tillson, Davis, Rockland, Maine.**—Plain, polished, and ornamental granite work. T 51. 102
- 186 Maine Slate Co., Skowhegan,** Maine.—Roofing slate. T 53. 102
- 187 Chapman Slate Co., Bethlehem,** Pa.—Roofing slate, flagging, stairways, blackboards, posts, door and window sills, mantels. T 64. 102
- 188 Lehigh Slate Co., Slatington, Pa.—**Roofing and school slate, mantels, black-boards, bath tubs; bureau, table, and washstand tops. T 64. 102
- 189 Allentown Slate Mantel Co., Allen-**town, Pa.—Slate mantels. T 51. 102
- 190 Carpenter & Raymond, Cambridge** City, Ind.—Monumental work. T 71. 102
- 191 McDonald, Alexander, Cambridge,** Mass.—Rustic rockwork and cross. N 56. 102
- 192 Bodwell Granite Co., Rockland,** Maine.—Granite samples. T 72. 102
- 193 Brinton, Joseph H., Thornebury P.** O., Pa.—Serpentine stone from quarries in Chester county, Pa. T 55. 102
- 194 Scorgie, Wight, & Co., Cambridge,** Mass.—Polished granite fountain. T 53. 102
- 195 Struthers, W., & Sons, Philadel-**phia, Pa.—Mantels, font, and other marble work; sand-blast work. T 52. 102
- 196 Pennsylvania Marble Co., Philadel-**phia, Pa.—Black marble mantel, book, and tiles. T 51. 102
- 197 Peach Bottom Slate Mining Co.,** Philadelphia, Pa.—Peach Bottom slate. T 50. 102
- 198 Rutland Marble Co., West Rut-**land, Vt.—Wrought and unwrought marble. T 59. 102
- 199 Maine Red Granite Co., Red Beach,** Maine.—Red granite cube, columns, etc. T 55. 102
- 200 Columbia Slate Co., Slatington, Pa.**—Manufactured Washington vein roofing slate. (*Outside.*) 102
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- 202 Wells, Chas. B., Marietta, Ohio.—**Sandstone for building purposes. T 64. 102
- 203 St. Johnsbury Granite Co., St.** Johnsbury, Vt.—Granite monument and tablet. (*Outside.*) 102
- 204 Merrill, Adams H., Williams-**burgh, Maine.—Roofing slate. T 50. 102
- 205 Columbia Slate Co., Slatington, Pa.**—Washington vein roofing slate. T 54. 102
- 206 Ohio Marble Co., Mineral Ridge,** Ohio.—Crude and finished black marble. T 53. 102
- 207 Union Slate Company, Auburn,** Maine.—Marbleized slate mantels, bracket shelves, and table tops. T 51. 102
- 208 Concord Granite Co., Quincy, Mass.**—Granite pedestal. N 48. 102
- 209 Sheldon & Slason, West Rutland,** Vt.—Pedestal of statuary and blue mottled marble. H 69. 102
- 210 Mitchell, William H., Quincy,** Mass.—Pedestal of Quincy granite. N 58. 102
- 211 McNally, William G., Cleveland,** Ohio.—Coat-of-arms of Ohio, carved from Berea stone. (*Ohio State Building.*) 102
- 212 Thompson, Wm. S., Springfield,** Ohio. T 54.
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- 213 Amherst Stone Co., Cleveland,** Ohio. T 57.
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- 214 Warthorst & Co., Massillon, Ohio.** T 58.
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- 216 Worthington & Sons, North Amherst, Ohio.** T 56.
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- 219 Berea Stone Co., Berea, Ohio.**
- 220 Hurst, J. K., Cleveland, Ohio.**
- 221 Ford, O. D., Cleveland, Ohio.**
- 222 Halderman, L., & Son, Cleveland, Ohio.**
- 223 Wagner, John, Cleveland, Ohio.**
- 224 Amherst Stone Co., Cleveland, Ohio.**
- 225 Black River Stone Co., Cleveland, Ohio.**
- 226 Paul, John, & Co., Massillon, Ohio.**
- 227 Wilson & Hughes Stone Co., Cleveland, Ohio.**
- 228 Clough Stone Co., Amherst, Ohio.**
- 229 Worthington & Sons, Amherst, Ohio.**
- 230 Ohio Stone Co., Cleveland, Ohio.**
- 231 McDermott, J., & Co., Cleveland, Ohio.**
- 232 Coshocton Stone Co., Coshocton, Ohio.**
- 233 Stitt, Price, & Co., Columbus, Ohio.**
- 234 Finnegan, M., Cincinnati, Ohio.**
- 235 Finnegan, J. H., Cincinnati, Ohio.**
- 236 Montgomery, R. M., Youngstown, Ohio.**
- 237 Caldwell & Tod, Youngstown, Ohio.**
- 238 Byers & McIlhainy, Youngstown, Ohio.**
- 239 Mauser & Haid, Youngstown, Ohio.**
- 240 Hamilton, Homer, Youngstown, Ohio.**
- 241 Warthorst & Co., Massillon, Ohio.**
- 242 Stocking, Z. S., Mansfield, Ohio.**
- 243 Bosier, Marcus, Dayton, Ohio.**
- 244 Huffman, William, Dayton, Ohio.**
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- 248 Mitchell, Wilson, Philadelphia, Pa.—Portasilica artificial stone building blocks, partitions, floors, colored paving tiles, etc.** T 53. 103
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- 250 Wampum Cement and Lime Co., limited, New Castle, Pa.—Portland cement, and samples in artificial stone of various designs.** T 57. 103
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- 252 Allen Cement Co., Siegfried's Bridge, Pa.—Crude and manufactured cement.** T 57. 103
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- 254 Lewis & Willett, Boston, Mass.—Highland artificial stone garden, vases and garden edging.** T 54. 103
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- 257 Hampton, Cutter, & Sons, Woodbridge, N. J.—Clays, kaolin, sand.** T 64. 104
- 258 Such, George, South Amboy, N. J.—Samples of clay.** T 58. 104
- 259 Paul, John, & Co., Massillon, Ohio.—White sandstone and white rock sand for glass.** T 55. 104
- 260 Walker, N. U., Wellsville, Ohio.—Fire clay. (*Outside.*)** 104
- 261 Bradford, H., Philadelphia, Pa.—Maryland quartz.** T 54. 104
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- 263 Toll, Charles, Monroe, Mich.—Washed and crude silic.** T 67. 104
- 264 Gihlmann, Joseph, Bellaire, Ohio.—Wooden mold for shaping blown glass.** T 64. 104
- 265 Dover Fire Brick Co., Canal Dover, Ohio.—Fire brick and fire clay.** T 63. 104
- 266 Kreischer, B., & Son, Philadelphia, Pa.—Fire clay, etc.** X 56. 104
- 267 American Kaolin Co., New Garden, Pa.—Kaolin, clays, and sand.** X 58. 104
- 268 Dixon Crucible Co., Jersey City, N. J.—Crude and refined graphite.** P 72. 105
- 269 Strow, Wile, & Co., Philadelphia, Pa.—Blacklead crucibles, retorts, covers, etc.; plumbeago, crude and prepared; lumber pencils, stove polish.** T 59. 105
- 270 Taylor, Robert, & Co., Philadelphia, Pa.—Blacklead crucibles.** T 58. 105
- 271 Morse Bros., Canton, Mass.—Stove polish, lumber pencils, plumbeago.** T 56. 105
- 272 Agnew, D. F., & Co., Pittsburgh, Pa.—Plumbeago crucibles, stove polish.** T 58. 105
- 273 Jersey City Crucible Manufacturing Co., Jersey City, N. J.—Crucibles and stove polish.** T 58. 105
- 274 Phoenix Manufacturing Co., Taunton, Mass.—Crucibles and stove polish.** T 58. 105

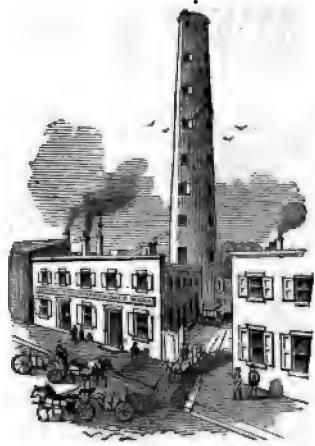
Stone, Mining Products, Metallurgical Products.

- 275 Webb, Robert, Boston, Mass.**—Stove polish, crude and prepared plum-bago. T 60. 105
- 276 Taunton Crucible Co., Taunton, Mass.**—Crucibles. T 60. 105
- 277 Hand, James C., & Co., Philadelphia, Pa.**—Corundum manufactured by the Pennsylvania Corundum Co. T 57. 106
- 278 Washington Mills Emery Manufacturing Co., Ashland, Mass.**—Emery. T 57. 106
- 279 Hyatt & Co., New York, N. Y.**—Polishing powder. T 54. 106
- 280 Carey, Samuel, New York, N. Y.**—Millstones. T 55. 106
- 281 Racine Hardware Manufacturing Co., Racine, Wis.**—Jewelers' polishing lathe and head, turning lathe, power wheels, countershaft, and engraving stand. N 71. 106
- 282 Scardefiehl, G. W., Newark, N. J.**—Burnishing stones and gilders' materials. T 57. 106
- 283 Detroit Polish Co., Detroit, Mich.**—Diamond polish. T 57. 106
- 284 U. S. Soapstone Manufacturing Co., Cincinnati, Ohio.**—Steatite. P 77. 106
- 285 Patten, F. H., Bath, Maine.**—Feldspar and quartz, for potteries and sand paper factories. T 70. 106
- 286 Lehigh Whetstone Co., Allentown, Pa.**—Whetstones from Lehigh mountain, near Allentown, Pa. T 57. 106
- 287 Russell, Jesse, Boston, Mass.**—Emery and crocus cloth, emery wheels and sticks, ladies' scissors, and needle sharpeners. T 68. 106
- 288 Coffin, Redington, & Co., New York, N. Y.**—Infusorial silica, from Nevada, and polishing powder. T 71. 106
- 289 Louis, Julius, & Bro., Jeffersonville, Ind.**—Hot Springs, Arkansas, and other oilstones. N 68. 106
- 290 Sibley, Freeman K., Waltham, Mass.**—Emery and crocus cloth. T 53. 106
- 291 Schultz, Carl H., New York, N.Y.**—Carbonic acid and mineral spring waters, siphons, glass fountains, etc. T 58. 107
- 292 Knight & Widden, Portland Plaster Mills, Portland, Maine.**—Calcined and ground land plaster. T 59. 107
- 293 Champion Spouting Spring, Saratoga Springs, N. Y.**—Saratoga water. T 58. 107
- 294 Godfrey, Bro., & White, Grand Rapids, Mich.**—Raw, manufactured, and natural crystallized gypsum. T 59. 107
- 295 Gettysburg Katalysine Co., Gettysburg, Pa.**—Katalysine spring water. T 57. 107
- 296 Navassa Phosphate Co., Baltimore, Md.**—Crude and ground phosphates, from Navassa Island, West Indies, and other fertilizing materials. T 57. 107
- 297 Charleston, S. C., Mining Co., Philadelphia, Pa.**—Goodrich phosphatic nodules, mined from Agassiz's Ashley fish basin, Lamb's Landing, S. C. T 58. 107
- 298 Bolen & Byrne, New York, N. Y.**—Artificial mineral waters, granular effervescent salts, siphons, etc. T 60. 107
- 299 Lippincott, Chas., & Co., Philadelphia, Pa.**—Apparatus for dispensing aerated waters. B 38. 107
- 300 Lawrence, A. R., & Co., Saratoga Springs, N. Y.**—Saratoga waters, and apparatus for drawing them. T 68. 107
- Metallurgical Products.**
- 301 Hastings & Co., Philadelphia, Pa.**—Gold leaf, foil, and bronze; silver leaf, bronze powder, etc. P 47. 110
- 302 Auer, Henry, Philadelphia, Pa.**—Silver leaf, in all its stages of manufacture. P 43. 110
- 303 Cambria Iron and Steel Co., Johnstown, Pa.**—Iron—pig, bloom, and muck bar, rail piles and rails; steel—Bessemer pig, and spiegeleisen, ingots, blooms, and rails. T 65. 111
- 304 Wood, W. D., & Co., McKeesport Iron Works, Pittsburgh, Pa.**—Patent planished sheet iron. T 61. 111
- 305 Park Bros. & Co., Black Diamond Steel Works, Pittsburgh, Pa.**—Cast steel; samples of homogeneous crucible cast steel boiler plate and flangings. T 62. 111
- 306 Rowland, James, & Co., Kensington Iron and Steel Works, Philadelphia, Pa.**—Anvil brand, refined bar, band, skelp, hoop, and nut iron; plow, cultivator, and shovel steel. T 63. 111
- 307 Wood, Alan, & Co., Philadelphia, Pa.**—Planished, galvanized, and common, and charcoal bloom, sheet, and plate, iron. T 61. 111
- 308 Straus, J. E., & Co., Philadelphia, Pa.**—Hoop iron. P 71. 111
- 309 Miller, Metcalf, & Parkins, Crescent Steel Works, Pittsburgh, Pa.**—Crucible steel and articles manufactured therefrom. T 60. 111
- 310 Hussey, Wells, & Co., Pittsburgh, Pa.**—Crucible cast steel bars, sheets, homogeneous boiler plates, railway axles, forgings, edge tools, rake teeth. T 68. 111
- 311 Phillips, Nimick, & Co., Sligo Iron and Steel Works, Pittsburgh, Pa.**—Iron and steel. T 63. 111
- 312 Union Iron Co. of Buffalo, Buffalo, N. Y.**—Solid wrought iron rolled beams. U 57 to 60. 111
- 313 Otis Iron and Steel Co., Cleveland, Ohio.**—Ingots, bars, plates, and forgings of Siemen's Martin steel. T 65. 111
- 314 Cleveland Rolling Mill Co., Cleveland, Ohio.**—Pig metals, rails, bars, etc., of iron and Bessemer or Siemen's Martin steel. T 60. 111
- 315 Akron Iron Co., Akron, Ohio.**—Best common and refined iron; iron for agricultural implements. T 62. 111
- 316 State of New Jersey (by Geo. H. Cook, State Geologist, New Brunswick, N. J.).** T 70.
a Iron, steel, spiegeleisen. 111
b Spelter, sheet zinc, zinc white. 111
- 317 Penn Steel and Iron Co., Clintonville, N. Y.**—Loops, blooms, billets, bars, and steel. T 63. 111
- 318 Washburn & Moen Manufacturing Co., Worcester, Mass.**—Iron wire rods; iron and steel wire. T 63. 111

Metallurgical Products.

- 319 American Sheet and Boiler-plate Co., Cleveland, Ohio.**—Plate, sheet, corrugated, galvanized, metallic tile, universal plate and agricultural iron, Bessemer or Siemen's Martin steel. T 59. ^{III}
- 320 Cooper, Hewitt, & Co., New York, N. Y.**—Iron fluxes, blooms, pigs, rods, bars, rails, beams; chain, wire, horseshoe, and Martin steel. T 66. ^{III}
- 321 Hanging Rock Iron Region Furnaces, Chas. Campbell, Commissioner, Ironton, Ohio.**—Pig iron, with articles manufactured therefrom. T 69. ^{III}
- 322 Beale, Horace A., Parkersburg, Pa.**—Rolled iron for boiler tubes and plates, hollow bottom plates for puddling furnaces. T 66. ^{III}
- 323 Clark, Wm., & Co., Pittsburgh, Pa.**—Hoop, band, and scroll iron. T 66. ^{III}
- 324 Reese, Graff, & Woods, Pittsburgh, Pa.**—Wrought iron, cast and special steel, horse and mule shoes, steel yoke calls. T 66. ^{III}
- 325 Pittsburgh Steel Casting Co., Pittsburgh, Pa.**—Cast steel castings. T 66. ^{III}
- 326 McCullough Iron Co., Philadelphia, Pa.**—Bloom and refined cleaned sheet iron; charcoal blooms. P 70. ^{III}
- 327 Moorehead & Co., Soho Iron Mills, Pittsburgh, Pa.**—Galvanized and block sheet iron; roofing and ceiling irons. T 66. ^{III}
- 328 Henderson, James, Hamburg, Pa.**—Wrought iron made by the Henderson process. T 59. ^{III}
- 329 Brown & Co., Wayne Iron and Steel Works, Pittsburgh, Pa.**—Cold-blast charcoal metal, blooms, boiler plate, bars; agricultural irons. T 62. ^{III}
- 330 Guille Anti-friction Metal Co., New York, N. Y.**—Anti-friction metal for solid bearings of machinery and railroads. T 63. ^{III}
- 331 Edgar Thomson Steel Co. (limited), Pittsburgh, Pa.**—Bessemer steel rails, billets, blooms, and ingots. T 66. ^{III}
- 332 Edgar Thomson Steel Co. (limited), Pittsburgh, Pa.**—Steel rails. (*Outside.*) ^{III}
- 333 Lucy Furnace Co., Pittsburgh, Pa.**—Pig metal, etc. T 66. ^{III}
- 334 Carnegie Bros. & Co., Pittsburgh, Pa.**—Wrought iron beams, channels, bridge iron, etc. T 66. ^{III}
- 335 Wilson, Walker, & Co., Pittsburgh, Pa.**—Railroad car forgings. T 66. ^{III}
- 336 Keystone Bridge Co., Pittsburgh, Pa.**—Karakin Bay pivot bridge, weldless chord bars, wrought iron tubular sectional columns. T 66. ^{III}
- 337 United States Corrugated Elbow Co., Cincinnati, Ohio.**—Stovepipe elbow machine; stovepipe elbows. T 61. ^{III}
- 338 Gregory & Co., Jersey City, N. J.**—American cast steel. T 59. ^{III}
- 339 Duncan, John W., Philadelphia, Pa.**—Pig metal. T 72. ^{III}
- 340 Tuscarawas Coal and Iron Co., Cleveland, Ohio.**—Pig iron. T 71. ^{III}
- 341 Rhodes & Co., Cleveland, Ohio.**—Bessemer car-wheel and malleable charcoal irons. T 71. ^{III}
- 342 Woodstock Iron Co., Anniston, Ala.**—Hot-blast, cold-blast, and spiegel-eisen iron, charcoal. T 63. ^{III}
- 343 Brady, Edward, Philadelphia, Pa.**—Button fastenings, collars, skates, steel, armor plates, and bolts. T 63. ^{III}
- 344 Crane Iron Co., Catawissa, Pa.**—Foundry and forge pig iron; cinder. T 64. ^{III}
- 345 Alexander, John S., Philadelphia, Pa.**—Bayonet spade. T 70. ^{III}
- 346 Singer, Nimick, & Co., Pittsburgh, Pa.**—Saw, tool, plow, machinery, safe, and boiler steel; steel railway axles and springs. T 69. ^{III}
- 347 Magnetic Iron Co., Philadelphia, Pa.**—Bessemer ore products. T 69. ^{III}
- 348 Crab Orchard Iron Co., Phila., Pa.**—Samples of iron and steel. T 69. ^{III}
- 349 Danville Iron Co., Danville, Pa.**—Railroad iron. T 66. ^{III}
- 350 Winch, Corydon, Philadelphia, Pa.**—Wrought iron spikes. T 66. ^{III}
- 351 Philadelphia Iron and Steel Co., Philadelphia, Pa.**—Special shapes and manufactures of iron. T 66. ^{III}
- 352 Cumberland Nail and Iron Co., Bridgeton, N. J.**—Wrought iron pipe. T 66. ^{III}
- 353 Davis, O. W., jr., Bangor, Me.**—Charcoal pig iron, fluxes, cinders; articles made in part from Katahdin iron. T 69. ^{III}
- 354 Durham Iron Co., Riegelsville, Pa.**—Flux, pig iron, and cinders. T 64. ^{III}
- 355 Glendon Iron Co., Easton, Pa.**—Flux, slag, and pig iron. T 64. ^{III}
- 356 Uhler, Peter, Easton, Pa.**—Flux, slag, pig iron. T 64. ^{III}
- 357 Keystone Iron Co., Easton, Pa.**—Flux, slag, and pig iron. T 64. ^{III}
- 358 Carter, W. T., & Co., Redington, Pa.**—Pig iron, slag. T 64. ^{III}
- 359 Northampton Furnace, worked by the Bethlehem Iron Co., Bethlehem, Pa.**—Pig iron, flux, slags. T 64. ^{III}
- 360 Lehigh Iron Co., Allentown, Pa.**—Flux, slag, and pig iron. T 64. ^{III}
- 361 Bethlehem Iron Co., Bethlehem, Pa.**—Charges and products of iron, Bessemer, and spiegel-eisen furnaces; products from Bessemer steel mill. T 64. ^{III}
- 362 Emmaus Iron Co., Allentown, Pa.**—Flux, slag, and iron. T 64. ^{III}
- 363 Millerstown Iron Co., Allentown, Pa.**—Flux and pig iron. T 64. ^{III}
- 364 Thomas Iron Co., Hokendauqua, Pa.**—Iron and flux. T 64. ^{III}
- 365 Allentown Rolling Mill Co., Allentown, Pa.**—Flux, iron, and slag, fist-plate bolts, nuts, spikes, rivets, etc. T 64. ^{III}
- 366 Allentown Iron Co., Allentown, Pa.**—Pig iron. T 64. ^{III}
- 367 Lehigh Valley Iron Co., Copley, Pa.**—Pig iron, cinders. T 64. ^{III}
- 368 Carbon Iron Co., Parryville, Pa.**—Flux, slag, and pig iron. T 64. ^{III}
- 369 Sancon Iron Co., Hellertown, Pa.**—Pig iron. T 64. ^{III}
- 370 Catawissa Iron Co., Catawissa, Pa.**—Rolled iron and steel, iron and steel bars bent hot and cold and fractured. T 64. ^{III}
- 371 Lehigh Zinc Co., Bethlehem, Pa.**—Metallic and sheet zinc, zinc oxide. T 64. ^{III}

Founded July 4th, 1808.



PHILADELPHIA

SHOT TOWER

OFFICE, 121 WALNUT ST.

FACTORY, 125 to 131 CARPENTER STREET,

PHILADELPHIA.

CIRCULAR

Showing the average weight and diameter of Shot manufactured by THOMAS W. SPARKS.

MOULD SHOT.

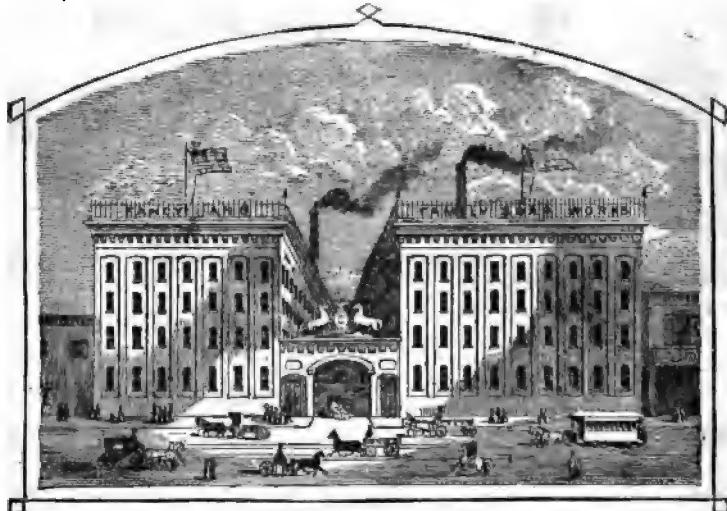
CALIBRE OR AVERAGE DIAM.	NUMBER.	NUMBER TO LB.	NUMBER OF PELLETS TO AN OUNCE, AVOIRDUPOIS.	
			As Found.	Without Fractions.
0.3329 inch.	L. Buck	128	8.00	
0.3256 "	C P	136	8.51	
0.3186 "	O	144	9.01	
0.3105 "	Buck	165	9.61	
0.2801 "	G	212	13.15	
0.2495 "	S G	320	18.62	

DROP SHOT.

0.1927 inch.	T	40.53	41
0.1768 "	B B B	50.49	50
0.1704 "	B B	58.80	59
0.1623 "	B	69.64	70
0.1512 "	1	84.76	85
0.1420 "	2	102.24	102
0.1358 "	3	117.57	118
0.1281 "	4	143.45	143
0.1151 "	5	187.49	187
0.1024 "	6	266.53	267
0.0968 "	7	317.04	317
0.0838 "	8	515.23	515
0.0733 "	9	714.69	715
0.0644 "	10	1097.92	1098
0.0538 "	11	1825.87	1826
0.0490 "	12	2918.38	2918

ALL SIZES OF CONICAL AND RIFLE BALLS CONSTANTLY ON HAND.

McKEONE, VAN HAAGEN & CO.



MANUFACTORY:

Nos. 2518-20-22-24-26-28-30-32-34-36-38-40-42-44-46-48-50
CALLOWHILL STREET, PHILADELPHIA.

FINEST TOILET SOAPS.

TROPICAL BOUQUET, PALACE BOUQUET, VIOLET BOUQUET,
PARISIAN BOUQUET, TURKISH BATH, OATMEAL,
GLYCERINE, TURTLE OIL, HONEY,
ROSE, MAIZE FLOUR, MUSK,
AND OVER 200 OTHER DIFFERENT KINDS OF FINE AND STAPLE TOILET SOAPS.

LAUNDRY SOAPS.

CROWN JEWEL, FINEST, ORIENTAL DETERSIVE,
AND OVER 80 OTHER DIFFERENT KINDS OF BEST STAPLE LAUNDRY SOAPS.

OUR SPECIALTY:

WHITE AND MOTTLED CASTILE SOAPS,
MADE FROM PURE OLIVE OIL.

SILK AND WOOLEN MANUFACTURERS' SOAPS.

English Mill Fulling.
Saxon Fig.

English Mill Olive Oil Fig.
Bradford Scouring.

McKEONE, VAN HAAGEN & CO.,
No. 33 SOUTH FRONT STREET.
PHILADELPHIA.

141 Chambers Street, New York.
102 State Street, Boston, Mass.

Metallurgical Products.

- 372 Stewart & Co., South Easton, Pa.**—Round, square, and triangular iron wire. T 64. III
- 373 Gough, Edward, Allentown, Pa.**—Turned rolls. T 65. III
- 374 Bay State Iron Co., Boston, Mass.**—Homogeneous iron boiler plates and iron. T 64. III
- 375 Co-operative Iron and Steel Works, Danville, Pa.**—T and street passenger railroad iron. T 63. III
- 376 Shafter, R. M., Carrick Furnace, Franklin county, Pa.**—Cold-blast pig iron. T 63. III
- 377 Philadelphia and Reading Railroad Co., Philadelphia, Pa.**—Rails. T 72. III
- 378 Nes, Charles M., and Mintzer, S. J., Philadelphia, Pa.**—Steel and steel-capped rails. T 63. III
- 379 Shelley Iron Co., Shelley Iron Works, Ala.**—Charcoal pig iron, chilled castings, wire rods, cotton ties. T 71. III
- 380 Chrome Steel Co., Brooklyn, N. Y.**—Chrome steel, with samples showing torsional, tensile, and compressive strength; welded chrome steel and iron, ingredients of manufacture. T 64. III
- 381 Cartwright, McCurdy, & Co., Youngstown, Ohio.**—Hooping. T 64. III
- 382 Jones, Ingold, & Co., Pittsburgh, Pa.**—Tool and die cast steel, material of manufacture, fluxes, crucibles. T 67. III
- 383 Rockhill Iron and Coal Co., Philadelphia, Pa.**—Pig iron. T 72. III
- 384 Tecumseh Iron Co., Tecumseh, Ala.**—Charcoal pig iron, limestone, charcoal. T 70. III
- 385 Albany and Rensselaer Iron and Steel Co., Troy, N. Y.**—Bessemer steel and iron rails, plates, merchant bars, axles, horseshoes, etc. T 68. III
- 386 Atha, Benj., & Co., Newark, N. J.**—Round rolled cast steel. T 71. III
- 387 Morse & Bennett, New York, N. Y.**—Steel railroad axle, tubing and spinning rings. T 68. III
- 388 Grand Tower Mining, Manufacturing, and Transportation Co., Grand Tower, Ill.**—Iron ore products, cokes. T 68. III
- 389 Globe Rolling Mill Co., Cincinnati, Ohio.**—Iron. T 63. III
- 390 Lackawanna Iron and Coal Co., Scranton, Pa.**—Steel and iron railroad bars. U 52. III
- 391 Passaic Rolling Mill Co., Paterson, N. J.**—Rolled iron, rivets, nuts. T 64. III
- 392 Cox, Justice, jr., & Co., Philadelphia, Pa.**—Pig, bar, sheet, tank, pipe, and angle iron; spikes, railway car axles. T 70. III
- 393 Riverside Iron Works, Wheeling, W. Va.**—Nails, spikes; bar and pig iron. T 64. III
- 394 L. & I. Rogers Iron Co., Ausable Forks, N. Y.**—Round and square iron and charcoal billets for steel, from Palmer ore. T 62. III
- 395 Vesuvius Furnace, Etna Iron Works, Ironton, Ohio.**—Pig iron, cold blast charcoal car-wheel iron. T 68. III
- 396 Etna Furnace, Etna Iron Co., Hanging Rock, Ohio.**—Pig iron, cold-blast charcoal car-wheel iron. T 68. III
- 397 Alice Furnace, Etna Iron Works, Hanging Rock, Ohio.**—Pig iron, "Whitewell ovens" and Ferry process. T 68. III
- 398 Blanche Furnace, Etna Iron Works, Ironton, Ohio.**—Pig irons, Whitewell hot-blast and Ferry process. T 68. III
- 399 Hecla Iron and Mining Co., Ironton, Ohio.**—Pig iron, cold-blast charcoal car-wheel irons. T 68. III
- 400 Monitor Furnace Co., Ironton, Ohio.**—Pig iron, cold-blast charcoal car-wheel iron. T 68. III
- 401 Mount Vernon Furnace, Hiram Campbell & Sons, Ironton, Ohio.**—Pig iron, hot-blast charcoal foundry iron. T 68. III
- 402 Grant Furnace, W. D. Kelly & Sons, Ironton, Ohio.**—Pig iron, hot-blast charcoal irons. T 68. III
- 403 Center Furnace, W. D. Kelly & Sons, Ironton, Ohio.**—Pig iron, hot-blast charcoal irons. T 68. III
- 404 Howard Furnace Charcoal Iron Co., Ironton, Ohio.**—Pig iron, hot-blast charcoal irons. T 68. III
- 405 Buckhorn Furnace, Charcoal Iron Co., Ironton, Ohio.**—Pig iron, hot-blast charcoal irons. T 68. III
- 406 Olive Furnace, Campbell, McGuigan, & Co., Ironton, Ohio.**—Pig iron, hot-blast charcoal iron. T 68. III
- 407 Lawrence Furnace Co., Ironton, Ohio.**—Pig iron, hot-blast charcoal iron. T 68. III
- 408 Pine Grove Furnace, Means, Kyle, & Co., Hanging Rock, Ohio.**—Pig iron, hot-blast charcoal irons. T 68. III
- 409 Ohio Furnace, Means, Kyle, & Co., Hanging Rock, Ohio.**—Pig iron, hot-blast charcoal iron. T 68. III
- 410 Ironton Furnace Iron and Steel Co., Ironton, Ohio.**—Pig iron, Player hot-blast. T 68. III
- 411 Belfont Iron Works, Ironton, Ohio.**—Pig iron, Player hot-blast. T 68. III
- 412 Washington Furnace, Union Iron Co., Portsmouth, Ohio.**—Pig iron, hot-blast charcoal iron. T 68. III
- 413 Scioto Furnace, L. C. Robinson & Co., Portsmouth, Ohio.**—Pig iron, hot-blast charcoal iron. T 68. III
- 414 Bloom Furnace, John Paul & Co., Portsmouth, Ohio.**—Pig iron, hot-blast charcoal irons. T 68. III
- 415 Clinton Furnace, W. I. Bell, Wheelersburg, Ohio.**—Pig iron, hot-blast charcoal iron. T 68. III
- 416 Buckeye Furnace Co., Jackson, Ohio.**—Pig iron, hot-blast charcoal iron. T 68. III
- 417 Cambria Furnace, D. Lewis & Co., Samsonville, Ohio.**—Pig iron, hot-blast charcoal iron. T 68. III
- 418 Jackson Furnace, L. P. N. Smith's heirs, Sciotoville, Ohio.**—Pig iron, hot-blast charcoal iron. T 68. III
- 419 Jefferson Furnace Co., Oak Hill, Ohio.**—Pig iron; cold-blast charcoal car-wheel and machinery iron. T 68. III

MINING AND METALLURGY.

Metallurgical Products.

- 420 Orange Iron Co., Jackson, Ohio.**—Pig iron, hot-blast Jackson county stone coal iron. T 68. ^{III}
- 421 Star Furnace Co., Jackson, Ohio.**—Pig iron, hot-blast Jackson county stone coal iron. T 68. ^{III}
- 422 Huron Iron Co., Jackson, Ohio.**—Pig iron, hot-blast Jackson county stone coal iron. T 68. ^{III}
- 423 Tropic Furnace Co., Jackson, Ohio.**—Pig iron, hot-blast Jackson county stone coal iron. T 68. ^{III}
- 424 Globe Iron Co., Jackson, Ohio.**—Pig iron, hot-blast Jackson county stone coal iron. T 68. ^{III}
- 425 Fulton Furnace, Globe Iron Co., Jackson, Ohio.**—Pig iron, hot-blast Jackson county stone coal iron. T 68. ^{III}
- 426 Ophir Furnace Co., Jackson, Ohio.**—Hot-blast pig iron. T 68. ^{III}
- 427 Milton Furnace and Coal Co., Wellston, Ohio.**—Pig iron, Jackson county softener iron. T 68. ^{III}
- 428 Wellston Coal and Iron Co., Wellston Ohio.**—Pig iron, Jackson county stone coal iron. T 68. ^{III}
- 429 Lincoln Furnace, I. M. McGhee's estate, Rud's Mills, Ohio.**—Pig iron, cold-blast charcoal iron. T 68. ^{III}
- 430 Eagle Furnace, L. C. Damarin & Co., Rud's Mills, Ohio.**—Pig iron, hot-blast charcoal iron. T 68. ^{III}
- 431 Richland Furnace Co., Richland P. O., Ohio.**—Pig iron, hot-blast charcoal iron. T 68. ^{III}
- 432 Hope Furnace, L. C. Damarin & Co., Portsmouth, Ohio.**—Pig iron, hot-blast charcoal iron. T 68. ^{III}
- 433 Hamden Furnace, L. C. Damarin & Co., Portsmouth, Ohio.**—Pig iron, hot-blast charcoal iron. T 68. ^{III}
- 434 Vinton Furnace, Bancroft, Rader, & Co., Vinton Station, Ohio.**—Pig iron, hot-blast bituminous coal and coke irons. T 68. ^{III}
- 435 Keystone Furnace Co., Portsmouth, Ohio.**—Pig iron, hot-blast charcoal iron. T 68. ^{III}
- 436 Monroe Furnace, Union Iron Co., Portsmouth, Ohio.**—Pig iron, hot-blast charcoal iron. T 68. ^{III}
- 437 Latrobe Furnace, Bundy & Cobb, Berlin Cross-roads, Ohio.**—Pig iron, hot-blast charcoal iron. T 68. ^{III}
- 438 Logan Furnace Co., Logan county, Ohio.**—Pig iron, hot-blast charcoal iron. T 68. ^{III}
- 439 Union Furnace, Brooks & Hueston, Haydensville, Ohio.**—Pig iron, hot-blast charcoal iron. T 68. ^{III}
- 440 Pascal Iron Works, Philadelphia, Pa.**—Cast iron work for Main Exhibition building. ^{III}
- 441 Lewis, Oliver, & Phillips, Pittsburgh, Pa.**—Iron in merchant bars and odd shapes. T 64. ^{III}
- 442 Roberts, Henry, Newark, N. J.—Iron, Bessemer steel, and cast steel wire. N 69.** ^{III}
- 443 Andrews, Hitchcock, & Co., Cleveland, Ohio.**—Merchant bar and sheet iron. V 61 to 64. ^{III}
- 444 Mount Savage Furnace, Lexington and Carter county Mining and Manufacturing Co., Lexington, Ky.**—Pig iron, hot-blast charcoal iron. T 68. ^{III}
- 445 Buffalo Furnace, Culbertson, Earhart, & Co., Greenupburg, Ky.**—Pig iron, hot and cold-blast charcoal iron. T 68. ^{III}
- 446 Hunnewell Furnace, Eastern Kentucky Railway Co., Riverton, Ky.**—Pig iron, hot-blast charcoal foundry iron. T 68. ^{III}
- 447 Pennsylvania Furnace, Eastern Kentucky Railway Co., Riverton, Ky.**—Pig iron, hot-blast charcoal foundry iron. T 68. ^{III}
- 448 Charlotte Furnace Co., Riverton, Ky.**—Pig iron, hot-blast charcoal foundry iron. T 68. ^{III}
- 449 Laurel Furnace, Robert Scott & Co., Riverton, Ky.**—Pig iron, cold-blast charcoal car-wheel iron. T 68. ^{III}
- 450 Gallia Furnace, Norton, Campbell, & Co., Portsmouth, Ohio.**—Pig iron, hot-blast charcoal iron. T 68. ^{III}
- 451 Raccoon Mining and Manufacturing Co., Riverton, Ky.**—Pig iron, hot and cold-blast charcoal iron. T 68. ^{III}
- 452 Ashland Furnace, Lexington and Big Sandy Railroad Co., Ashland, Ky.**—Pig iron, bituminous coal, and Player hot-blast. T 68. ^{III}
- 453 Bellefonte Furnace, Means, Russell, & Means, Ashland, Ky.**—Pig iron, hot-blast charcoal foundry iron. T 68. ^{III}
- 454 Norton Iron Works, Ashland, Ky.**—Pig iron, nail plate, nails. T 68. ^{III}
- 455 Buenavista Furnace, Means & Co., Ashland, Ky.**—Pig iron, hot-blast charcoal iron. T 68. ^{III}
- 456 Trigg Furnace, D. Hillman & Sons, Empire Iron Works, Ky.**—Pig iron, cinders, etc.; hot-blast charcoal iron. T 68. ^{III}
- 457 Center Furnace, D. Hillman & Sons, Empire Iron Works, Ky.**—Pig iron, hot-blast charcoal iron. T 68. ^{III}
- 458 Empire Iron Works, Trigg county, Ky.**—Samples of boiler plate and refined charcoal iron. T 68. ^{III}
- 459 Cleveland Malleable Iron Co., Cleveland, Ohio.**—Malleable iron castings and tackle blocks; fifth wheels. T 68. ^{III}
- 460 Traber & Aubery, Cincinnati, Ohio.**—Broken car-wheels, chill tests, and castings from Hanging Rock pig iron; pig iron. T 68. ^{III}
- 461 Hanging Rock Iron Region, Iron-ton, Ohio.**—Pig iron. T 68. ^{III}
- 462 Sellers, William, & Co., Edgemor Iron Co., Wilmington, Del.**—Wrought and cast iron work for Main Exhibition Building. ^{III}
- 463 Roberts, A. & P., Pencoyd Rolling Mills, Philadelphia, Pa.**—Wrought iron work for Main Exhibition Building. ^{III}
- 464 Morris, Tasker, & Co., Philadelphia, Pa.**—Cast iron work for Main Exhibition Building. ^{III}
- 465 Watson Manufacturing Co., Paterson, N. J.**—Iron framework of the Main Exhibition Building. ^{III}

Metallurgical Products, Mining Engineering.

- 466 Pusey, Jones, & Co., Wilmington,** Del.—Iron work for Machinery Hall. 111
- 467 State of Michigan (Jay A. Hubbell,** Houghton, Mich., Superintendent of Mineral Department). V 67.
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GREAT BRITAIN.—STATISTICAL PREFACE.

THE following brief table is given (approximately) of the area, population, revenue, and commerce of the British Empire. It is not possible to give the exact figures, but for all practical purposes those now given will be sufficient. The colonies which exhibit are treated under their proper names.

NAME OF COUNTRY.	AREA IN SQUARE MILES.	POPULATION.	REVENUE.	PUBLIC DEBT.	IMPORTS AND EXPORTS.
Great Britain and Ireland,	122,518	31,857,338	\$389,600,000	\$3,555,100,000	\$3,262,900,000
Indian Possessions, etc.,	1,558,254	240,000,000	243,500,000	550,310,000	472,390,000
Other Eastern Possessions,	25,264	3,150,000	10,714,000	8,766,000	160,710,000
Australasia,	3,087,000	2,105,000	53,570,000	219,150,000	365,250,000
North America,	3,620,500	4,000,000	21,915,000	107,140,000	209,410,000
Africa,	250,000	1,400,000	4,870,000	7,792,000	43,830,000
West Indies,	12,707	1,075,000	535,700	4,870,000	48,700,000
European Possessions,	120	160,000	1,022,700	1,217,500	73,050,000
Various settlements,	96,171	200,000	2,678,500	3,165,500	24,350,000
Totals,	8,772,534	283,947,338	\$728,405,900	\$4,457,511,000	\$4,660,590,000

The *United Kingdom of Great Britain and Ireland* is the full designation of the country more generally known as Great Britain or the United Kingdom. It includes the two large islands of Great Britain and Ireland, and the adjacent smaller islands, together with the Channel Islands and the Isle of Man.

The following table exhibits the area, in English square miles, and population, according to the last census of the several constituent parts:

	AREA.	POPULATION.
England,	50,922	21,495,131
Wales,	7,397	1,217,135
Scotland,	31,324	3,360,018
Great Britain,	89,648	26,072,284
Ireland,	32,481	5,411,416
Isle of Man, and Channel Islands,	394	144,638
Army and Navy, and Merchant Seamen,	122,518	229,000
		31,857,338

The island of Great Britain lies between latitude $49^{\circ} 57' 30''$ and $58^{\circ} 40' 24''$ north, and between longitude $1^{\circ} 46'$ east, and $6^{\circ} 13'$ west, and is the largest island in Europe. It is bounded on the north by the Atlantic, on the east by the North Sea, and on the south by the English Channel, and on the west by the Atlantic, the Irish Sea, and St. George's Channel. Its greatest length is about 608 miles, and its greatest breadth (from Land's End to the east coast of Kent), about 300 miles.

England, which may be roughly said to be divided from Scotland on the north by the Cheviot Hills and the Rivers Tyne and Solway, and from Wales by the Severn

and Dee, is, except on the west and north, for the most part a level country, so cultivated as to be highly productive. The other districts have mineral riches, as iron, tin, lead, copper, and coal, which make abundant amends for the poverty of their surface. Wales is generally mountainous, and also has great mineral wealth.

The greater part of the surface of Scotland is irregularly distributed into mountains and valleys, a very small proportion spreading into level plains. The eastern coast forms a waving, continuous, and rarely broken line; the western is extremely irregular, being deeply indented with bays and arms of the sea, and exhibiting steep promontories and mountainous islands. The whole country is physically divided into *Highlands* and *Lowlands*—the former comprehending the northwest, west, and central portions; the latter, generally speaking, the east coast and the country south of the Forth and Clyde.

Ireland is an island lying between $51^{\circ} 26'$ and $55^{\circ} 23'$ north latitude, and $5^{\circ} 20'$ and $10^{\circ} 26'$ west longitude. It is about 60 miles to the west of England. On three sides it is washed by the Atlantic Ocean, and on the east by the Irish Sea and St. George's Channel. Its greatest length is, from north to south, 306 miles, and from east to west 120 to 180 miles. Ireland is divided into the four provinces of Ulster, Leinster, Munster, and Connaught, which are again subdivided into 32 counties.

The geology of Great Britain is of peculiar importance. British geologists have given to the world the names whereby the various strata are known, and British rocks form the typical series of the earth's strata. The whole recognized series of stratified deposits occur in Britain, one or two only being more fully developed elsewhere; and it is only in these singular cases that the foreign equivalents are taken as the types. British geology is no less important from the influence it has had in the development of the country, its mineral wealth, especially the coal and iron, being the real sinew of Britain's wealth and power.

In the year 1874, there was produced from the ore nearly 6,000,000 tons of pig iron, value £16,476,372; and 385 ounces of gold were raised, value £1540. Copper, tin, lead, zinc, silver, and other metals brought the total value of metals produced up to £19,539,070. The aggregate value of all the minerals, metals, coal, etc., obtained in the United Kingdom in 1874, was £67,834,313. Included in this were 125,043,257 tons of coal, value £46,849,194.

The climate of Great Britain is mild and equable in a remarkable degree, the winters being considerably warmer and the summers colder than at places within the same parallels of latitude. The mean temperature of England is 49.5° , and of Scotland 47.5° .

Very few species of plants or animals are peculiar to Great Britain. The flora, for the greater part, resembles that of Germany; but in the south of England there is, as might be expected, a closer correspondence with that of the northwest of France; and some plants found in the Channel Islands and on the French coast appear nowhere in Britain but on the southwest coast of England. The mountains of Wales, Cumberland, and Scotland have a vegetation resembling that of Scandinavia more than that of the mountains of central or southern Europe. The state of the case is much the same as to the fauna. There are, however, many remarkable instances both of plants and animals, which, from these apparent relations to continental Europe, might be expected in Great Britain, and which are not indigenous to it; as, for instance, among plants, the Norway spruce, and among animals, the lemming, both common in Scandinavia. The progress of civilization and of cultivation has completely banished from Great Britain many of the animals which were once numerous, as bears, wolves, etc. On the other hand, many plants which were unquestionably introduced by man, have become thoroughly naturalized.

For administrative purposes, Great Britain with its surrounding islands (excepting the Channel Islands and the Isle of Man, which are under peculiar jurisdiction) is divided into 84 counties or shires.

The soil of Great Britain is almost exclusively devoted to the production of the two primary necessities of society,—breadstuffs (chiefly wheat, barley, and oats) and grass, roots, etc., as food for domestic animals. The annual value of the pastures and meadow hay is immense. The total extent of land returned in 1872, as being under all kinds of crops, bare fallow and grass, was 31,004,173 acres in Great Britain, 15,746,547 acres in Ireland, 88,573 in the Isle of Man, 18,026 acres in the island of Jersey, and 12,007 acres in the islands of Guernsey, Alderney, etc., making a total for the United Kingdom of 46,869,326 acres. The number of horses included in the agricultural returns was 1,808,259; the number licensed in Great Britain was 857,043; the number of others than agricultural horses exempt from license duty, was probably about 35,000; and the number belonging to the army at home may be stated at 15,000, which would bring the total number of horses in the United Kingdom up to 2,715,000. The total number of cattle returned for the United Kingdom in 1872, was 9,718,000; sheep, 32,246,000; pigs, 4,178,000.

Constabulary returns, based upon information obtained from farmers and others and received by the Boards of Guardians, show that in the year 1873, Ireland produced 469,563 quarters of wheat, 6,912,765 quarters of oats, 1,016,339 quarters of barley, 25,576 quarters of bere and rye, 48,375 quarters of beans and peas, 2,683,060 tons of potatoes, 4,429,967 tons of turnips, 515,690 tons of mangold wurtzel, 278,923 tons of cabbage, 19,843 tons of flax, and 3,306,163 tons of hay. At the end of 1873, Ireland had 4,142,400 head of cattle, 4,482,053 sheep, 532,146 horses and 1,042,244 pigs.

The following table shows the condition of the textile industries of the United Kingdom, 1874:

	NO. OF FACTORIES.	HANDS EMPLOYED.
Cotton,	2,655	479,515
Woolen,	1,800	135,605
Worsted,	692	142,097
Flax,	449	128,459
Silk,	818	45,559
Shoddy,	125	3,431
Hemp,	61	5,211
Jute,	110	37,920
Hair,	27	1,211
Hosiery and other factorys,	557	27,667
Total,	7,294	1,006,675

The government of Great Britain is of the kind known as a "constitutional monarchy," in which the sovereign accepts of his dignity under an express agreement to abide by certain prescribed conditions. The sovereignty is hereditary in the family of Brunswick, now on the throne, and in the person of either a male or a female. The executive government of the United Kingdom is vested nominally in the crown, but practically in a committee of Ministers, commonly called the Cabinet, which has come to absorb the functions of the ancient Privy Council, the members of which, bearing the title of Right Honorable, are sworn "to advise the king according to the best of their cunning and discretion," and "to help and strengthen the execution of what shall be resolved." Though not the offspring of any formal election, the Cabinet is virtually appointed by Parliament, and more especially by the House of Commons, its existence being dependent on the possession of a majority in the latter body.

The powers of Parliament are politically omnipotent within the United Kingdom, its colonies and dependencies. It can make new laws, and enlarge, alter, or repeal those existing. Its authority extends to all ecclesiastical, temporal, civil, or military matters, as well as to altering or changing the constitution of the realm. Parliament is the highest court of law, over which no other has jurisdiction.

The budget estimates for the financial year 1875-76, laid by the Chancellor of the Exchequer before the House of Commons, April 15th, 1875, was as follows:

Total revenue,	£75,685,000
" expenditure,	75,266,000
" estimated surplus,	£419,000

The following figures show the numerical strength of the military force in the United Kingdom in 1875:

Cavalry,	13,358
Artillery,	19,418
Engineers,	4,020
Infantry,	55,590
Total,	92,386

The army estimates of March 31st, 1876, contain votes of money for four classes of reserves, as follows:

	MEN.
Militia,	139,018
Yeomanry cavalry,	15,130
Volunteers,	161,150
Enrolled pensioners and army reserve force,	32,000

The total force of the British army in India was stated, in the estimates of 1875-76, to amount to 63,197.

On the 1st of December, 1874, the navy consisted of 233 steamers and sailing vessels, manned by crews aggregating 60,000.

The following are the statistics for the year 1874 of the tonnage of British and foreign vessels (sailing and steam) entered and cleared at ports in the United Kingdom from and to foreign countries and British possessions:

	ENTERED.	CLEARED.	TOTAL.
British,	14,833,644	15,256,039	30,089,683
Foreign,	7,534,866	7,804,408	15,339,274
Total,	22,368,510	23,060,447	45,428,957

There were, in 1874, 20,872 vessels, with crews aggregating 203,606, and of a registered tonnage of 5,864,588.

On the 1st of January, 1875, there were 16,448 miles of railway open in the United Kingdom. The statistics of capital, passengers, receipts, and working expenses for the year 1874 were as follows: Total capital paid up (shares, loans), \$2,970,456,106; number of passengers, 478,316,701; total of traffic receipts, \$277,109,238; working expenses, \$158,040,397.

The number of letters delivered in 1874 was, in England and Wales, 804,000,000, in Scotland, 90,000,000, and in Ireland, 73,000,000. Of postal cards there were 66,000,000 delivered in England and Wales; 9,000,000 in Scotland; and 4,000,000 in Ireland; total for the United Kingdom, 79,000,000.

The number of newspapers and book packets delivered in 1874 was 207,000,000 in England and Wales, 29,000,000 in Scotland, and 23,000,000 in Ireland; total, 259,000,000. The number of money orders in 1874, in the whole of the United Kingdom was 15,900,562, of the aggregate value of £26,296,441. At the end of the year the total amount of deposits held by the Post Office Savings Bank was £24,030,711.

There were 19,116,634 telegraph messages forwarded from postal telegraph stations in the year 1874. The number of post offices at the end of 1874 was 12,950. The total number of telegraph offices, at the same date, was 5600, including 1800 railway telegraph offices. The total length of the postal telegraph wires at the end of 1874 was 107,000 miles.

In England, the chief institutions for education are the ancient national universities of Oxford and Cambridge; the more recent institutions of London, Durham, and Lampeter, in Wales; the classical schools of Eton, Westminster, Winchester, Harrow, Charter House, and Rugby; Owens College, Manchester, and other colleges and schools, chiefly for physical science; the various military schools; the colleges of the dissenting denominations; the middle class schools, either started by individual teachers or by associated bodies acting as directors, to whom the teachers are responsible; and the schools of design.

For primary education, a national system has now been established. Under the Elementary Education Act for England, 1870, a popularly elected school board is established in any district where the existing schools are deficient. Schools under the act are supported by school-rates and fees, and by parliamentary grants, varying according to the number of pupils, and their proficiency, as tested by different standards of examination. They are at all times to be open to government inspection. It is left to the discretion of school boards to make education compulsory.

Scotland possesses four universities for the higher branches of education, viz.: Edinburgh, Glasgow, St. Andrew's, and Aberdeen, besides a variety of other minor colleges. The Scotch education act, 1872, is modelled after the English act, but differs from it by enacting that a school board is to be elected in *every* parish and burgh; by making it illegal for parents to omit educating their children, between five and thirteen, in reading, writing, and arithmetic; and by comprehending higher class schools.

The number of the day-schools in Great Britain, inspected in 1871, was 10,700; the daily average attendance throughout the year was 1,434,488; 1,724,689 scholars were present at inspection; 875,298 were examined; and 598,203 passed the prescribed tests. On the registers of the inspected day-schools were 2,055,312 children, of whom 517,344 were under six years of age, 1,332,229 between six and twelve, and 205,739 above twelve; 2709 night-schools, were inspected, having an average attendance of 86,206 each night. In December, 1871, there were in Great Britain 15,605 certificated teachers, 1196 assistant teachers, and 21,854 pupil teachers.

Ireland is well supplied with educational establishments, having three universities, a large number of endowed schools, and an admirable system of mixed schools.

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GREAT BRITAIN.

Minerals, Ores, Stone, Mining and Metallurgical Products.

Minerals, Ores, Stone, Mining Products.

- 1 West Cumberland Iron & Steel Co. (limited), Workington, Cumberland.**—Iron ores. 100
Coal and coke. 101
Limestone. 103
- 2 Wigan Coal & Iron Co. (limited), Wigan, Lancashire, England.**—Cannel and gas coal. 101
- 3 Penrose & Richards, Swansea, South Wales.**—Coke fuel. 101
- 4 Dixon, Frederick, London, E. C.**—Patent fuel. 101
- 5 Duggeon, Arthur, Westminster, London.**—Peat fuel manufactured by the Irish Peat Fuel Co. 101
- 6 Lindley, Robert Charles, Mansfield, Nottinghamshire.**—Stones from the Mansfield quarries. 102
- 7 Cwmorthin Slate Co. (limited), Portmadoc, North Wales.**—Roofing slates. 102
- 8 Hunter, James, Aberdeen, Scotland.**—Red polished granite monument. 102
- 9 Macdonald, Field, & Co., Aberdeen, Granite Works, Aberdeen, Scotland.**—Polished red granite monument. 102
- 10 Penyrsored Slate Quarry Co. (limited), Carnarvon, North Wales.**—Roofing slates, slate slabs, cisterns, ridges for roofs, billiard slabs, slate partly manufactured. 102
- 11 Shearer, Smith, & Co., Dalbeattie Granite Quarries, Scotland.**—Scotch polished granite, and street paving blocks. 104
- 12 Bassbrook Granite Works, Bassbrook, Ireland.**—Blue and gray Irish granites in headstones, monuments, and building work. 102
- 13 Great North of Scotland Granite Co. (limited), Peterhead, Scotland.**—Monumental pedestal and vase in polished red granite. 102
- 14 Hollic & Co., Greenwich, London.**—Portland cement. 103
- 15 Patent Selenitic Cement Co. (limited), London.**—Method of preparing lime for mortar, for plastering and brickwork, and also for concrete. 103
- 16 Wouldham Cement Co., Wouldham-on-the-Medway, Kent, England.**—Portland cement and its ingredients in different stages of manufacture. Concrete blocks and other objects made therefrom. 103
- 17 Lavers, Alfred Hamilton, London.**—Portland cement, test blocks, cements, plaster of Paris, whiting. 103
- 18 Francis & Co., Cliffe Creek, Rochester.**—Cements, cement concrete, parian scagliola, and decorated parian. 103
- 19 Grays Chalk Quarries Co. (limited), Grays, Essex.**—Chalk, whiting, kilndried chalk, gilders whiting, flint. 103
- 20 Eastwood & Co. (limited), London.**—Portland cement; building, paving, ornamental, and fire bricks; Staffordshire blue bricks, and grooved pavirons, red paving, roofing tiles, ridges, and clinkers. 103
- 21 Pike, William Joseph, Wareham, Dorsetshire.**—Clays. 104
- 22 Harrison, George King, Lye and Brettell Lane Fire Clay Mines and Brick Works, Stourbridge, England.**—Stourbridge fire clays. 104
- 23 Dunn, Robert, & Co., St. Austell, Cornwall.**—China clay, in its raw material; samples for potting, bleaching, paper manufacturing, etc. 104
- 24 Oakley, John, & Sons, Wellington Mills, London.**—Crude emery stone; grain emery; flour emery. 106

Metallurgical Products.

- 25 Johnson, Matthey, & Co., London.**—Articles in platinum; rare and precious metals. 110
- 26 Wigan Coal & Iron Co. (limited), Wigan, Lancashire.**—Hematite, foundry and forge pig iron. 111
- 27 Biggs, John, Liverpool.**—Iron and steel produced by a new process. 111
- 28 West Cumberland Iron & Steel Co. (limited), Workington, Cumberland.**—Pig iron, spiegeleisen, granulated blast furnace slag, Bessemer steel in the ingot; steel forgings, rails, and rail sections, boiler and bridge plates, railway chairs, etc.; samples illustrating the testing of steel, and its metallurgy. 111
- 29 Smith, Frederick, & Co., Caledonia Works, Halifax, Yorkshire.**—Rope, rigging, telegraph, card, reed, and bonnet wire; iron in its various stages of manufacture into wire. 111
- 30 Houghton, William Dickson, Warrington.**—Wire for special and general purposes. 111
- 31 Edge & Sons, Coalport Works, Shropshire.**—Wire ropes and chains for mining and engineering purposes. 111

Metallurgical Products.

- | | |
|--|---|
| 32 Ash & Lacy, Globe Works, Staffordshire. —Galvanized, tinned, plain, and corrugated iron sheets; perforated zinc and metals, etc. III | 37 Swansea Tin Plate Co., The Tin and Terne Plate Manufacturers, Swansea Tin Plate Works, Swansea. —Tin and terne plates. III |
| 33 Cammell, Charles, & Co. (limited), Cyclops Steel & Iron Works, Sheffield. —Rolled iron armor plates. III | 38 Nash, Henry, & Co., Liverpool. —Tin and terne plates, black plate, and patent continuous roofing terne plate. III |
| 34 Siemens, Charles William, London. —Specimens of iron and steel. III | 39 Governor and Company of Copper Miners in England, The, Glamorganshire, S. W. —Tin and terne plates. III |
| 35 Baldwin, E. P. & W., Wilden Works, near Stourport.
a Button and sheet iron black plates. III
b Tin and terne plates; tinned sheets. III | 40 Morewood, E., & Co., Llanelli.
a Tin and terne plates. III
b Machines for manufacturing tin and terne plate and galvanized sheet iron. III |
| 36 Brown, John, & Co. (limited), Atlas Steel & Iron Works, Sheffield. —Armor plates; naval engineering. (<i>In Machinery Hall.</i>) III | 41 Phosphor Bronze Co. (limited), London. —Phosphor bronze tools, locks, keys, tubes, wire, sheet, steam fittings, parts of machinery. III |

NEW SOUTH WALES.—STATISTICAL PREFACE.

NEW SOUTH WALES, a British colony in the southeastern portion of Australia, is bounded on the north by a line which, beginning at Point Danger, in latitude, $28^{\circ} 8'$ south, follows several lines of heights across the Dividing Range till it meets the 29° parallel, which forms the rest of the boundary westward; on the west by the 141° meridian; on the east by the Pacific Ocean; and the line separating it from Victoria on the south runs from Cape Howe, at the southeast of the island, northwest to the source of the Murray, and then along that stream, in a direction west by north, to the western boundary of the two colonies.

Its area is 323,437 square miles, and its population in 1871 was, exclusive of aborigines, 503,981. At the same date the population of Sydney, the capital, was 134,755. Within the colony of New South Wales, the mountain range, which girdles nearly the whole island, is most continuous and elevated, and is known as the Dividing Range. The section of this mountain system on the southern boundary of the colony, called the Australian Alps, rises in Mount Kosciusko to 6500 feet. From this the range extends northward, the water-shed being from 50 to 150 miles distant from the east coast, and thus divides the colony into two slopes, with two distinct water systems. The rivers on the eastern side descend with great rapidity, and in oblique tortuous courses, their channels often forming deep ravines. Many of them are navigable in their lower course for sea-going steamers. The principal are the Richmond, Clarence, McLeay, Manning, Hunter, Hawkesbury, and Shoalhaven. The numerous streams that rise on the west side of the water-shed within the colony, all converge and empty their waters into the sea through one channel within the colony of South Australia. The southern and main branch of this great river system is the Murray. The other great trunks of the system are the Murrumbidgee, which is navigable, the Lachlan, at times reduced to a string of ponds, and the Darling. The Macquarie, passing through the rich district of Bathurst, is a large tributary of the Darling, but it reaches it only in the rainy seasons. The coast line from Cape Howe to Point Danger is upwards of 700 miles long, and presents numerous good harbors formed by the estuaries of the rivers. Owing to the great extent of the

colony, stretching as it does over eleven degrees of latitude, the climate is very various. In the northern districts, which are the warmest, the climate is tropical, the summer heat occasionally rising in inland districts to 120° , while on the high table-lands weeks of severe frost are sometimes experienced. At Sydney, the mean temperature of the year is about 65° . The mean heat of summer, which lasts here from the beginning of December to the 1st of February, is about 80° , but it is much modified on the coast by the refreshing sea breeze. The annual fall of rain is about 50 inches. Rain sometimes descends in continuous torrents, and causes the rivers to rise to an extraordinary height. Sometimes the rains almost fail for two or three years in succession. Along the coast, for 300 miles from the northern boundary, the soil and climate are admirably adapted for the growth of cotton, and that plant has already been cultivated as far south as the river Manning (latitude 32° south). Further south the climate is more temperate, and is fitted to produce all the grain products of Europe. Immense tracts of land, admirably adapted for agriculture, occur in the southwestern interior; while in the southeast coast districts, the soil is celebrated for its richness and fertility. In the north, the cotton and tobacco plants, the vine, and sugar-cane are grown; and pineapples, bananas, guavas, lemons, citrons, and other tropical fruits are produced. In the cooler regions of the south, peaches, apricots, nectarines, oranges, grapes, pears, pomegranates, melons, and all the British fruits are grown in perfection, and sometimes in such abundance that pigs are fed with them. Wheat, barley, oats, and all the cereals and vegetables of Europe are also grown.

In June, 1872, New South Wales had 5,615,054 sheep, 2,271,923 horned cattle, 233,220 horses, and 146,091 pigs. The total area of land under cultivation, at the same date, embraced 297,575 acres, of which there were under wheat, 154,030 acres, under barley, 3,462 acres, under oats, 13,795, under rye, 1,342, under maize, 119,956.

New South Wales is believed to be richer in coal than the other territories of Australia. In 1873, there were 26 mines worked, producing in the year 1,192,861 tons of coal, valued at £665,746.

The gold mines of New South Wales cover a vast area, extending chiefly over the districts called the Western Fields, the Northern Fields, and the Southern Fields. Of these the Western Fields are the most important, furnishing three-fourths of the total supply. The gold exports of 1873 consisted of 200,134 ounces, value £773,439, of gold dust and bar, and of 490 boxes, value £2,151,168, of gold coin. The yield from the copper mines, in 1873, was 6,027 tons.

The total exports during the year 1874 were £8,668,113; imports, £9,259,816.

The constitution of New South Wales vests the legislative power in a Parliament of two houses, the first called the Legislative Council, and the second the Legislative Assembly. The Legislative Council consists of not less than 21 members, nominated by the crown, and the Assembly of 72 members, elected by sixty constituencies. To be eligible a man must be of age, a natural-born subject of the Queen, or, if an alien, he must have been naturalized for five years, and resident for two years before election. There is no property qualification for electors, and the votes are taken by secret ballot. The executive is in the hands of a governor, nominated by the crown.

The public revenue during 1874 was £4,200,827, the expenditure, £3,506,780. The public debt, chiefly incurred for railways and other public works, amounted, at the end of 1874, to £10,842,415.

New South Wales possesses 396 miles of railways. Of electric telegraph, there were in the colony 6,114 miles of wire, at the end of 1874. Number of paid messages transmitted during 1874, 385,000; number of telegraph stations, 105.

The post office of the colony transmitted 9,300,000 letters, 4,720 newspapers, and 250,000 packets in 1874.

The number of schools, public and private, in 1872, was 1,464, with 106,691 pupils.

NEW SOUTH WALES.

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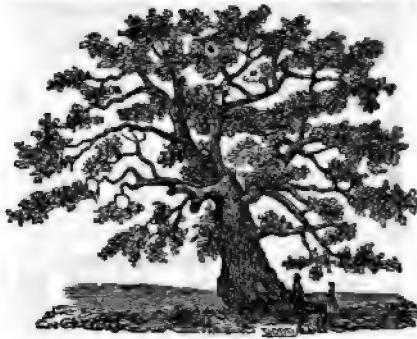
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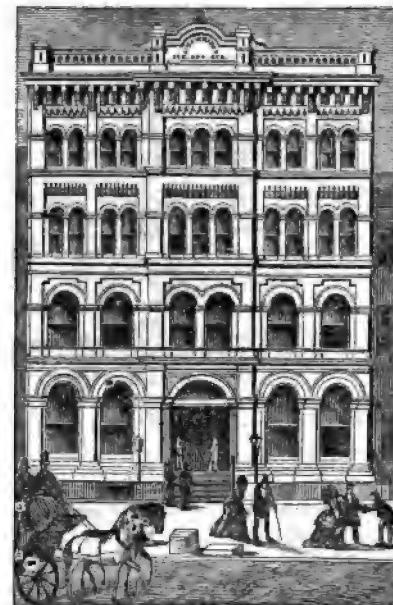
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NEW SOUTH WALES.

(North of Nave, Columns 10 to 17.)

Minerals, Mineral and Metallurgical Products, Engineering.

Minerals, Ores, Stone, Mining Products.

- 1 McCallum, Argyle, Yaas.—Copper and lode ores from Woolgarloo Mine; iron ore from Bogolong. 100
- 2 Stuart, Seymour C.—Auriferous quartz from Adelong; lode and stream tin ore. 100
- 3 King, P. G., Goonoo.—Sulphuret of antimony, from Nundie. 100
- 4 Howard, John, Sofala.—Antimony, from Crudine creek. 100
- 5 Coulter, Edward, Sydney.—Magnetic iron ore containing gold and copper, from Mount Lambie. 100
- 6 Department of Mines, Sydney.
a Mineralogical and geological collection; specimens of gold from the Southern, Western, and Northern districts; models of gold nuggets found in New South Wales; gold trophy, showing production of New South Wales. 100
- 6 Coal trophy. 101
- 7 Government Printing Office, Sydney, New South Wales.—Mineral and rocks. 100
- 8 Fountain, John, Gosford, Brisbane Water.—Iron ore from Brisbane Water. 100
- 9 King, P. G., Goonoo Goonoo.—Lepidodendron fossils from Goonoo Goonoo. 100
- 10 Wilson, W., Monaltrie, Richmond River.—Fossils. 100
- 11 Butchart, J. Hawkins, Sydney.—Lode and stream tin ore. 100

- 12 Caddell, Alfred, Sydney.—Tin ore and wash dirt from Vegetable Creek Tin Mines. 100
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VICTORIA.—STATISTICAL PREFACE.

VICTORIA comprises the southeast corner of Australia, at that part where its territory projects furthest into cool southern latitudes. Wilson's Promontory, to the southeast, the most southerly headland, just passes the 39° of south latitude, while the most northern point, which is at the opposite or northwest extreme, is in south latitude 34° . The longitude comprises 9° ,—between 141° and 150° east of Greenwich. To the west is the colony of South Australia, separated by the 141° of east longitude, to the north is New South Wales, separated by the line of the Murray river eastwards from 141° east longitude to its source, and thence by a straight line southeast to Cape Howe, and from Cape Howe to South Australia again the colony is bounded on the south by Bass's Strait. The extreme length is east and west, and

is about 500 miles, by an extreme width north and south of 300 miles. But a remarkable indentation of both the north and south boundaries opposite each other, about the middle of the colony, reduces the breadth between the head of the Port Phillip inlet and the Murray to only 120 miles. The superficial area is 88,198 English square miles.

Although Victoria may be called mountainous, as compared with the general flatness of Australia, it has much of the quiet and peculiar scenery characteristic of that division of the world. The highest mountain in Australia, Mount Feathertop, is 6303 feet in height. The largest river, which runs throughout its entire course in Victoria, is the Goulburn, 230 miles long. The Murray, which winds for a distance of 630 miles along the northern boundary of Victoria, rises in New South Wales, and falls into the sea in South Australia, so that it can scarcely be called a Victorian river.

The climate is on the whole healthful and agreeable, but subject to frequent and sudden change in condition and temperature. The average temperature of Melbourne is 57.6°, about the same as that of Marseilles, Bordeaux, Bologna, Nice, and Madrid. The common summer heat is from 65° to 80°, with an occasional advance to 90°, and even to 100°, during hot winds and a dry season. The winter range is mostly from 45° to 60°. Ice occurs in the midwinter of July, but it rarely, except on elevated ground, survives the noonday sun.

The estimated population of Victoria, on the 31st of March, 1875, was returned at 810,442 by the Registrar-general.

In 1875 there were 1,011,776 acres under crops, including 332,936 acres of wheat, 114,921 of oats, 29,505 of barley, 35,183 of potatoes, 119,031 of hay, and 253,129 of green forage. The gross produce was: wheat, 4,850,165 bushels; oats, 2,121,612 bushels; barley, 619,896 bushels; potatoes, 124,310 tons; hay, 157,261 tons; wine, 577,493 gallons. The total number of horses was, in 1875, 180,254; milch cows, 241,137; horned cattle, 717,251; sheep, 11,221,036; pigs, 137,941. The manufactures of Victoria employed 25,000 persons, and the capital invested in machinery and plant was £5,000,000. The number of persons at work in the gold fields, December 31st, 1874, was 45,151, of whom 12,180, or 27 per cent., were Chinese.

The total value of the imports and exports of Victoria, including bullion and specie, for the year 1874, was as follows: Imports, £16,953,985; exports, £15,441,109. The most important, in value, of the imports are woools, live stock, sugar, cotton, apparel and haberdashery, and tea. The two staple articles of export are wool and gold. The total exports of wool in 1874 amounted to 88,662,311 pounds, of the value of £6,373,641. The exports of gold, exclusive of specie, was 1,012,153 ounces, of a declared value of £4,053,288.

The number of mercantile vessels on the register of Victoria, at the end of 1874, was 429, with a total tonnage of 70,696, and crews of 3229 men. Of these vessels 47 were steamers.

The constitution of Victoria was established by an act passed by the legislature of the colony in 1854, and subsequently confirmed by the crown. The legislative authority is vested in a parliament of two chambers—the Legislative Council, composed of 30 members, and the Legislative Assembly, composed of 78 members. A property qualification is required both for members and electors of the Legislative Council. No electoral property qualification is required for graduates of British universities, matriculated students of the Melbourne university, religious ministers of all denominations, certificated schoolmasters, lawyers, medical practitioners, and officers of the army and navy. Six members, or a fifth, of the Legislature Council must retire every two years, so that a total change is effected in ten years. The members of the Legislative Assembly are elected by universal suffrage, for the term of three years. The executive is vested in a governor appointed by the crown. The revenue for the year 1874-75 was £4,406,906; the expenditure, £4,425,277. The public debt, incurred mainly in the construction of public works, amounted to £12,485,432 on January 1st, 1875.

Victoria has a more extensive system of railways than any other of the Australasian colonies. On the 1st of January, 1875, there were 457½ miles opened for traffic, and 427 more in course of construction. There were, in 1874, 148 telegraph stations, 4464 miles of wires. Number of telegrams forwarded during the year, 701,080. The work of the post office during the same year, 15,732,888 letters, 6,866,913 newspapers, and 1,269,822 packets. Number of post offices, 802.

The following table shows the educational condition of the population above five years of age:

	MALES.	FEMALES	TOTAL.
Able to read and write,	264,665	209,898	474,665
Able to read only,	30,049	36,336	66,385
Unable to read,	25,462	26,315	51,077

The state of education among the children, between 5 and 15, showed that 846 children out of 1000 could read, 640 could read and write, and only 154 were totally uninstructed. Education in Victoria is gratuitous, secular, and compulsory, and the legislature has voted large sums for the primary education of the people.

The total number of schools is 1867, including 908 "common" schools, with an attendance of 154,353 pupils. (Furnished, in part, by the Victoria Commission.)

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bourne.	

VICTORIA.

(North of Nave, Columns 10 to 17.)

Minerals, Precious Stones.

Minerals, Ores, Stone, Mining Products.

- 1 Collection of Rocks, Minerals, and Fossils, illustrative of the geology, mineralogy, and mining resources of Victoria, exhibited for, and on behalf of the Government, by R. Brough Smyth, F. G. S., F. L. S., Assoc. Inst. C. E., Secretary for Mines, and Chief Inspector of Mines for the colony. 100
 - a Older igneous or plutonic rocks.
 - b Newer igneous or volcanic rocks.
 - c Aqueous rocks.
 - d Upper silurian.
 - e Upper palæozoic.
 - f Mesozoic-carbonaceous.
 - g Tertiary.
 - h Collection of mineral specimens.
 - i Economic collection: auriferous quartz.

4 Fac-similes of gold nuggets found in Victoria.

5 Economic minerals.

m Fossil fruit.

2 Acadia Catherine Gold Mining Company, Sandhurst.—Golden stone. 100

3 Bleasdale, J. I., Melbourne.—Collection of gems and precious stones, consisting of diamonds, blue sapphires, oriental emeralds, rubies, aqua-marines, topazes, spinels, beryls, opals, garnets, tourmalines, etc. 100

4 Commissioners for Victoria, for the Philadelphia Exhibition, Melbourne.—Fac-similes of nuggets found in Victoria, and mineralogical and geological specimens. 100

5 Costerfield Gold and Antimony Mining Co., Melbourne.—Antimony ore. 100

Minerals, Metallurgical Products, Mining Engineering.

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Mining Engineering.

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NEW ZEALAND.—STATISTICAL PREFACE.

NEW ZEALAND, a British colony in the South Pacific Ocean, consists of three principal islands, called, respectively, the North, South, and Stewart Islands. There are several small islets—mostly uninhabited—dependent on the colony; the chief of them are the Chatham Islands and the Auckland Islands. The New Zealand group is situated about 6500 miles west of South America, and about 1200 miles east of Australia. The entire group lies between 34° and 48° south latitude and 166° and 179° east longitude. The three principal islands extend in length 1100 miles, but their breadth is extremely variable, ranging from 46 miles to 250 miles; the average breadth being about 140 miles. The North and South Islands are separated by Cook Strait, which is crossed by steamers in about two hours.

The total area of New Zealand is about 100,000 square miles, or 64,000,000 acres.

According to a census taken March 31st, 1874, the population (exclusive of the aborigines) numbered 299,514 souls. It is estimated that the present white population (April, 1876) is about 400,000. The Maori population, according to an approximate census taken on June 1st, 1874, was 45,470.

The aborigines, called Maoris, who formerly caused much trouble, though a large number have always sided with the British, are now peacefully settling down to agricultural pursuits, and, since 1871, permanent tranquility appears to have been established.

The New Zealand Islands are of volcanic origin, and a great portion of the entire area is occupied by mountains, among which are many extinct and a few active volcanoes. The mountains are mostly clothed with evergreen forests of luxuriant growth, interspersed with fern-clad ranges, and occasionally with treeless grassy plains. Extensive and rich valleys and sheltered dales abound in the North Island; and in the east of the South Island there are many extensive plains of rich meadow-land, admirably adapted either for agriculture or cattle-breeding. Water and water-power are found in great abundance in the colony, and the numerous rivers are

subject to sudden floods from the melting of the mountain snows. As a rule, however, the streams are short, and are not navigable for more than 50 miles above their mouths. The chief is Waikato river, in the North Island, which, issuing from the Taupo lake (30 miles long by 20 broad), flows in a northern direction for 200 miles, and reaches the sea on the west coast. In the South Island, the rivers Clutha, Mataura, and Waiau, all flowing south, are among the chief.

In the North Island, around Lakes Rotomahana and Rotorua, are a number of grand and beautiful geysers, which throw up water heated to two degrees above the boiling point. The southwest coast of the South Island is indented with a number of deep sounds, of which Milford Sound is the chief. In this sound the water is unfathomable; the only way of securing a ship being to moor it, stem and stern, to the trees which overhang the water. Steamers of 2000 tons have been thus moored. The geology of New Zealand is remarkable in a high degree. The mountains, which are of every variety of outline, are chiefly composed of the lower slate-rocks, intersected with basaltic veins, primary sandstone, and limestone. Extensive beds of coal and lignite exist; the former have been to some extent worked, and are at present being largely developed by the construction of railways and harbor works in their vicinity.

Of the whole surface extent of New Zealand, one-fourth is estimated to consist of dense forest tracts, one-half of excellent soil, and the remainder of waste lands, scoræ hills, and rugged mountain regions. Nearly 40,000,000 acres are supposed to be more or less suitable for agriculture and cattle-breeding. The soil, though often clayey, has in the volcanic districts more than a medium fertility; but the luxuriant and semi-tropical vegetation is perhaps as much due to excellence of climate as to richness of soil. Owing to the prevalence of light and easily worked soils, all agricultural processes are performed with unusual ease. The climate of New Zealand is one of the finest in the world. The country contains few physical sources of disease; the average temperature is remarkably even at all seasons of the year, and the atmosphere is continually agitated and freshened by winds that blow over an immense expanse of ocean. In the North Island, the mean annual temperature is 57°; in the South Island, 52°. The mean temperature of the hottest month at Auckland, in the northernmost province, is 68°, and at Dunedin, in the most southern province, 58°; of the coldest month, 51° and 40° respectively. The air is very humid, and the fall of rain is greater than in England, but there are more dry days. All the native trees and plants are evergreens. Forests, shrubberies, and plains are clothed in green throughout the year, the results of which are, that cattle, as a rule, browse on the herbage and shrubs of the open country all the year round, thus saving great expense to the cattle-breeder; and that the operations of reclaiming and cultivating land can be carried on at all seasons. The seasons in New Zealand are the reverse of ours; January is their hottest month, and June the coldest. All the grains, grasses, fruits, and vegetables grown in England are cultivated in the colony with perfect success, being excellent in quality and heavy in yield; while, besides these, the vine is cultivated in the open air, and maize, the taro (*Caladium esculentum*), and the sweet potato are cultivated with success in the sunny valleys of the North Island.

The entire average under crop, in February, 1875, was 1,788,800. Of the crops, the principal were wheat, oats, barley, potatoes, and sown grass. At the same date, the number of holdings was 16,092, the population being 296,018. The average yield of wheat was, in 1875, over 28 bushels per acre.

The live stock of the colony consisted, at the census of March 1st, 1874, of 99,859 horses, 494,917 cattle, 11,704,853 sheep, 123,921 pigs, and 1,058,198 head of poultry.

Large gold fields were discovered in the spring of 1857. In the year 1874, there were 376,388 ounces of gold, of the declared value of £1,505,331, exported from New Zealand, being little more than half the amount and value exported in 1871, while

from April 1st, 1857, to December 31st, 1874, the total quantity of gold exported was 7,599,973 ounces, valued at £29,577,016 sterling.

The principal produce of the colony is wool, 46,848,735 pounds, valued at £2,834,695, having been exported in 1874.

The total imports of the colony during the year 1874 were £8,121,812; the total exports, £5,251,269.

The temperature, it will be thus observed, is very equable, for while the summers are as cool as those of England, the winters are as warm as those of Italy. The mean annual temperature of Auckland is nearly the same as at Rome; at Wellington, nearly the same as at Milán; at Dunedin, nearly the same as at London. The official reports of the British Army Medical Department shows that, where the annual mortality from all diseases out of every 1000 British soldiers quartered in the United Kingdom was 16, it was only 5 out of every 1000 in the troops quartered for more than 25 years in New Zealand. In other words, this colony appears to be peculiarly favorable to the duration of human life.

In connection with this, it may be mentioned, in order to show the redundancy of the population in New Zealand, that in 1874 the births were 40.05 per 1000 of the population, and the death rate was only 12.97 per 1000, while the marriages were 8.81 for every 1000 people.

The class of people most required in New Zealand are farmers with a small capital, carpenters, who can earn, according to their skill, from 11 shillings to 15 shillings per diem, and single women, who always gain good wages, and rarely stop in service for a long time, being greatly in demand in the matrimonial market. All classes of laborers find ready employment at remunerative rates.

By an imperial statute, passed in 1852, the legislative power is vested in the Governor and a Parliament of two chambers; the first called the Legislative Council, and the second the House of Representatives, and collectively, the General Assembly. The Legislative Council consists at present of 49 members, nominated by the crown for life; and the House of Representatives of 83 members, elected by the people for five years. Two Maoris sit in the Legislative Council, and 4 in the House of Representatives. Two of the latter also are members of the Executive Council. The Governor is assisted by an Executive Council, composed of the responsible ministers for the time being, and any others he may appoint. Members of both branches receive pay at the rate of 150 guineas for the session, which generally lasts three months. Every owner of a freehold worth £50, or tenant householder, in the country at £5, in the town at £10 a year rent, is qualified to vote for members of the House, and is eligible for membership. The seat of government is at Wellington, a town of about 12,000 people, and centrally situated.

The colony is divided into nine provinces; four in the North, and five in the South Islands. Each of these provinces is governed by an elected Superintendent and Provincial Council. In 1875, the General Assembly passed a bill declaring that the provincial governments should cease to exist after the close of their next session. The form of local government which is to take the place of provincial government has not been decided upon, but will probably take the shape of legislative powers.

In the year 1874, the total ordinary revenue (including provincial) was £1,873,448, and the territorial revenue, £1,150,900, which, with incidental receipts of £44,264, makes the total general revenue—ordinary, territorial, and incidental—amount to £3,068,612. The total ordinary expenditure by general and provincial governments was £2,960,711.

Beyond the ordinary expenditure, a sum of £2,725,893 was spent, which is charged to the loan account. The public debt of New Zealand amounted, at the end of 1874, to £13,366,936, and as a loan expenditure is still proceeding, it is estimated that the total debt will shortly amount to about £19,000,000. Against this there is a sinking fund already amounting to £1,000,000, and, moreover, a large amount has been

spent on reproductive works. In 1870, the sum of £4,000,000 was authorized to be borrowed for the purposes of emigration and public works (such as railways, roads, telegraphs, water-races, bridges, etc.), besides £1,000,000 for defence and other purposes. Since then, further large loans have been contracted for public works. To assist in the development of these works, a vast number of emigrants have been brought into the country, receiving either free passage from England or a grant of land. Railways are now being constructed throughout the islands, 260 miles being open for traffic; 420 miles under construction, of which a good deal is near completion; and 330 miles are authorized to be constructed.

Under the stimulus of the public works and emigration policy, no less than 43,965 emigrants arrived in New Zealand in 1874.

On the 31st of December, 1874, the colony had 2632 miles of telegraph lines, and 5284 miles of wires. The number of telegrams during the year was 844,301, of which total 724,582 were private, and the remainder government messages.

During the year 1874, the post office received 4,339,165 letters, and dispatched 4,719,291. The total number of newspapers received was 3,872,668, and dispatched, 2,434,024. Money orders to the number of 62,712 and the amount of £263,164 were issued during 1874.

Grammar and free schools, endowed from the public revenues of the various provinces, several colleges, and two universities, one being established in Otago and the other a corporation endowed by the general government, are the principal educational institutions.

The shipping entered in 1874 consisted of 856 vessels, with a tonnage of 399,296. Of these, 237 vessels, measuring 201,017 tons, were British; 552, measuring 170,303 tons, colonial; and 67, measuring 27,976, were foreign. Of the foreign vessels entered, 50 were American. Coasters are not included in the above statistics. In 1874 the number of vessels entered coastwise was 14,351, and their tonnage 1,353,085.

Commission from NEW ZEALAND to the International Exhibition:

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THE HON. WILLIAM SISBORNE.

WILLIAM HORT LEVIN, ESQ.

DANIEL MCINTYRE, ESQ., Consular Agent of the United States Government at Wellington.

JAMES HECTOR, ESQ., C. M. G., M.D., F. R. S., Resident Commissioner.

ARTHUR THOMAS BOTHAMLEY, Secretary.

NEW ZEALAND.

(*North of Nave, Columns 10 to 17.*)

Minerals, Stone, Metallurgical Products.

Minerals, Ores, Stone, Mining Products.

- 1 Parapara Iron and Coal Co., Nelson.**
 a Brown hematite ore. 100
 b Coal from the Avrere river. 101
 c Limestone used as a flux for hematite ore. 103
- 2 Johnstone Bros., Nelson.—Hematite iron ore.** 100
- 3 Nelson Committee, Nelson.**
 a Iron, plumbago, galena, zinc blende, copper, antimony, and argentiferous lead ores. 100
 b Coal from Coalbrookdale, Mount Rochfort, and Reefton. 101
 c Marble from Ruatanuka, Golden Bay. 102
 d Porcelain clays from Pakawan and Ruatanuka; steatite from Golden Gully, Collingwood. 104
- 4 Louisson, T. B., Nelson.—Iron ore, calcined iron ore.** 100
- 5 Washbourn, W. E., Nelson.—Argentiferous lead ore.**
- 6 Taranki Committee.—Titanic iron sand, older tertiary marl, trachyte pebble, trachyte with crystals of hornblende, trachyte cast, hornblende, obsidian, nephrite, tarankite, carnelian.** 100
- 7 Colonial Museum, Wellington.**
 a Collection of minerals, etc., arranged by James Hector, containing magnetic iron, hematite, chrome, copper, lead, zinc, and manganese ores. 100
 b Specimens illustrating the classification of New Zealand coals; petroleums from Sugar Loaf Point, Waiapee, Waipawa. 101
 c Marble from Collingwood, Nelson. 102
 d Steatite from Parapara Valley, Nelson. 104
- 8 Kennedy Brothers, Nelson.**
 a Coal from the Brunner Mine, and coke manufactured from it. 101
 b Raw and ground fire clay. 104
- 9 Albion Coal Co., Nelson.—Coal from Ngakauau.** 101

- 10 Reid, Alexander W., Canterbury.—Coal from Kowai Pass.** 101
- 11 Oakden, J. J., Canterbury.—Anthracite coal from Lake Coleridge.** 101
- 12 Zaranalli Committee.—Lignite from Urenui.** 101
- 13 Rowley, Wilson, & Co., Otago.—Coal from Shag Point, Palmerston.** 101
- 14 Ross, A., Poverty Bay, Auckland.—Petroleum.** 101
- 15 Wilson, W., Christchurch.—Hewn white and yellow limestone.** 102
- 16 Zaranaki Committee.—Potters' clay from Urenui.** 104
- 17 National Museum, Washington, J. Henry, Secretary.**
 a Skeletons of the moa (*dinornis* and *palapteryks*). 100
 b Model of egg of the *dinornis*. 100

Metallurgical Products.

- 18 New Zealand Commissioners.—Specimens of alluvial gold and gold-bearing quartz from Auckland, Westland, and Otago, collected by the Bank of New Zealand.** 110
- 19 Government of New Zealand.—Specimens of alluvial gold from Nelson and Westland.** 110
- 20 Nelson Committee.—Specimens of auriferous quartz from Reefton.** 110
- 21 Government of New Zealand.—Specimens of auriferous quartz from the west coast.** 110
- 22 Reefton Committee.—Specimens of auriferous quartz from the Ihangahua and Lyell districts, Nelson.** 110
- 23 Government of New Zealand.—Specimens of alluvial gold from Otago; bars of melted and refined gold; bars of chloride of silver, and silver; model of gold weighing 375 oz., as exported by Bank of New Zealand, Auckland.** 110
- 24 Tolhurst, George E., Bank of New Zealand, Wellington.—Models of gold ingots.** 110

CANADA—STATISTICAL PREFACE.

THE Dominion of Canada consists of the provinces of Ontario, Quebec—formerly Upper and Lower Canada—Nova Scotia, New Brunswick, Manitoba, British Columbia, and Prince Edward's Island. The two principal provinces, Quebec and Ontario, are almost entirely embraced within the basin of the river St. Lawrence, but occupy only those portions north of the great lakes, and of the river as far as the town of Cornwall (45° north latitude and 74° 45' west longitude), whence eastward they occupy both banks, and are bounded on the south by the United States. The most westerly limit is the heads of the Pigeon and Arrow rivers, which debouch in Lake Superior. The eastern or maritime provinces embrace no portion of the basin of the great river.

The following table shows the area and population of the various provinces :

	AREA, ENG. SQ. MILES.	POPULATION (1871).
Ontario,	121,260	1,620,851
Quebec,	210,020	1,191,516
Nova Scotia,	18,660	387,800
New Brunswick,	27,105	285,594
Manitoba,	2,891,734	11,953
British Columbia,	213,000	10,586
Prince Edward's Island,	2,173	94,021
Total,	3,483,952	3,602,321

The principal river of Canada is the St. Lawrence. Its most important tributaries are all from the left. The St. Lawrence drains an area of 565,000 miles. The Ottawa, 450 miles long, forms the boundary between Ontario and Quebec. The St. Maurice is nearly 400 miles in length, and the Saguenay, noted for its fine scenery, is 225 miles long. The only affluents from the right worth naming are the Richelieu, the St. Francis, and the Chaudiere.

A great part of Canada, more especially the shores of Lake Superior, is valuable only for mineral resources, such as iron, zinc, lead, copper, silver, gold, cobalt, manganese, gypsum, marl, granite, sandstone, limestone, slate, and marbles of nearly every imaginable color. Considerable portions, also, though heavily timbered, chiefly with pine, are yet but little adapted to settlement and cultivation. Towards the Gulf of the St. Lawrence, again, a considerable section derives importance mainly from the fisheries, being, with partial exceptions in Gaspe, comparatively worthless for every other object. Thus the area for the profitable production of ordinary cereals cannot materially exceed 40,000 square miles, containing, however, within this space a singularly small portion of irreclaimable surface. This cultivable block increases regularly in width and fertility, from its commencement on the lower St. Lawrence to the shores of Lake Huron. Below Quebec—to say nothing of the precarious nature of the crops—there may always be seen, on one or on both sides, the primeval forest. Between that city, again, and the basin of the Ottawa, a gradual improvement shows itself, even on the north side; and towards the south there stretches away to the frontier of the United States a broad belt of generally undulating character, probably the best field in the country for the blending of pasture and agriculture. From the basin of the Ottawa inclusive, the parallel of the south end of Lake Nipissing may be said to cut off, towards the southwest, the entire residue of the practicable soil, in the shape of a roughly defined triangle, which, as a whole, is at least equal, in the growth of grain in general and of wheat in particular, to any region of the same extent in North America.

The climate of Canada is subject to great extremes of heat and cold, the thermometer ranging between 102° above and 36° below the zero of Fahrenheit.

As Canada slants southwards eight or nine degrees from the mouth of the St Lawrence to that of the Detroit, which communicates between Lakes St. Clair and Erie,

the climate of the west must be warmer than that of the east. Besides, the lakes of Upper Canada appear, in a good measure, to neutralize and mitigate the extremes of a Canadian climate. While Quebec in winter ordinarily enjoys five or six months of sleighing, the corresponding season in Toronto ranges from five or six days to five or six weeks. As to summers, the difference in favor of Toronto is rather in point of duration than of intensity. As indications of the climate of Canada, it may be stated that the isle of Orleans, immediately below Quebec, is famous for its plums, and the island of Montreal for its apples; and from the neighborhood of Toronto to the head of Lake Erie, grapes and peaches ripen without any aid whatever. Melons, again, of large size, come to maturity, through the settled parts of the province, in the open air; and pumpkins and squashes attain enormous size, some of them near Toronto having weighed 300 pounds.

The following statistics of the mining, agricultural, and manufacturing industries are taken from the Official Report of the Canadian Census of 1871. They refer only to the provinces of Ontario, Quebec, New Brunswick, and Nova Scotia.

RAW MINERAL PRODUCTS.

Coal,	671,008 tons.	Gold,	22,941 oz.
Iron ore,	129,363 "	Silver,	69,197 "
Copper ore,	13,310 "	Phosphate of lime, . . .	1,980 tons.
Pyrites,	2,800 "	Mica,	4,010 lbs.
Manganese,	635 "	Crude petroleum, . . .	12,969,435 gallons.
Other ores,	14,063 "	Grained marble,	8,870 cub. ft.
Peat,	14,772 "	Building stone for dressing,	5,206,796 "
Plumbago,	270 "	Roofing slate,	6,013 sqs.
Lump gypsum,	114,433 "		

The statistics of agriculture are as follows:

Spring wheat,	10,355,912 bushels.	Beans,	220,644 bushels.
Winter wheat,	6,367,961 "	Buckwheat,	3,720,484 "
Barley,	11,496,068 "	Corn,	3,802,830 "
Oats,	42,489,463 "	Potatoes,	47,330,187 "
Rye,	1,004,354 "	Turnips,	24,339,476 "
Peas,	9,905,720 "	Grass and clover seed,	348,605 "
Hay,	3,818,041 tons.		

The principal items of furs are 488,182 muskrats, 49,799 minks, 48,151 beavers, 19,271 moose, cariboo and deer, 17,582 martens, 37,402 seals, 12,861 foxes, 6132 otters, and 2553 bears.

The following are the statistics of manufactures:

Capital invested,	\$77,964,020
Number of hands employed,	187,942
Amount of yearly wages,	40,851,009
Value of raw material,	124,907,846
Total value of products,	221,617,773

The statistics of the fisheries are as follows: Vessels, 991, men, 6984; boats, 16,876, men, 25,876; shoremen, 4647; fathoms of nets, 1,879,435.

The leading items of the product of the fisheries were 682,631 quintals of cod, 120,213 quintals of haddock, 417,300 barrels of herring, 77,925 barrels of mackerel, 2491 gallons of cod-liver oil, and 676,403 gallons of other fish oils.

The foreign trade, during 1874, was, including bullion and specie, as follows: Imports, \$128,213,582; exports, \$89,851,928. The trade of the Dominion of Canada is chiefly with the United States and Great Britain.

The "British North American Act, 1867," orders that the constitution of the Dominion shall be "similar in principle to that of the United Kingdom;" that the executive authority shall be vested in the sovereign of Great Britain and Ireland, and carried on in her name by a Governor-general and Privy Council; and that the legislative power shall be exercised by a Parliament of two Houses, called the Senate and the House of Commons. Provision is made in the act for the admission of Newfoundland, still an independent province of British North America, into the Dominion of Canada. The seven provinces forming the Dominion have each a separate parliament and administration, with a Lieutenant-governor at the head of

the executive. They have full power to regulate their own local affairs, dispose of their revenues, and enact such laws as they may deem best for their own internal welfare, provided only they do not interfere with, and are not adverse to, the action and policy of the central administration under the Governor-general.

The public debt of the Dominion, incurred chiefly on account of public works, and the interest on which forms the largest branch of the expenditure, was \$116,082,917 on the 1st of July, 1875. The total revenue during the year ending June 30th, 1874, was \$39,930,791; the total expenditure during the same period, \$36,524,876.

The strength of the troops maintained by the imperial government, and forming the garrison of Halifax, was reduced, in 1871, to 2000 men. Besides these, Canada has a large volunteer force, and a newly organized militia. By the terms of the act passed in March, 1868, "to provide for the defence of the Dominion," the militia consists of all British subjects between the ages of 18 and 60, who are called out to serve in four classes, namely: 1st class, 18 to 30, unmarried; 2d, from 30 to 45 unmarried; 3d, 18 to 45, married; 4th, 45 to 60. A general order from the Militia Department, issued in 1874, reduced the active militia force, for the purposes of drill and pay, for the years 1874 and 1875, to 30,000 officers and men. Two schools of military instruction for infantry are established in each of the provinces of Ontario and Quebec, and one in each of the provinces of New Brunswick and Nova Scotia.

The naval forces of Canada consisted, in 1875, of 8 screw steamers, carrying 18 guns. Besides these, the government owned two fast steamers, employed on coast service, not fitted with guns, but available as gunboats.

The total shipping registered on the 31st of December, 1874, was 6930 vessels of a burthen of 1,158,363 tons. Included in this were 634 steamers, of 76,487 tons.

At the end of October, 1874, Canada had a network of railways of a total length of 4022 miles. There were, at the same period, lines of a total length of 1120 miles in course of construction, and 3000 miles more had been surveyed and concessions granted by the government.

On June 30th, 1875, there were in the Dominion, 3943 post offices. The number of letters and post-cards sent through the mails, during the year, was 34,750,000; of newspapers, 25,480,000.

The provinces of Quebec and Ontario have separate school laws, adapted to the religious element prevailing in either. Each township in Ontario is divided into several school sections, according to the requirements of inhabitants. The common schools are supported partly by the government and partly by local self-imposed taxation, and occasionally by the payment of a small fee for each scholar. All teachers must pass an examination before a county board of educators, or receive a license from the provincial normal school, empowering them to teach, before they can claim the government allowance.

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CANADA.

(*North of Nave, Columns 16 to 23.*)

Minerals.

Minerals, Ores, Stone, Mining Products.	
1 Gatling Gold Mining Co., Marmora, Ont.—Gold-bearing arsenical pyrites.	100
2 Russell, W. W., Ottawa, Ont.—Gold in quartz.	100
3 Lindsay, J. A., Toronto, Ont.—Gold, silver, and magnetic ores.	100
4 Jackfish Lake Gold Mining Co., Toronto, Ont.—Gold and silver in quartz.	100
5 McKellar Bros., Prince Arthur's Landing, Ont.—Gold in quartz.	100
6 McKellar, D., Prince Arthur's Landing, Ont.—Gold in quartz.	100
7 Toronto Gold Mining Co., Toronto, Ont.—Gold-bearing arsenical pyrites.	100
8 Lockwood, W. P., St. Francois, Q.—Gold.	100
9 Geological Survey, Canada, Q.	
a Quartz, magnetic sand, and alluvial gold, models of gold nuggets, platinum, copper pyrites, native copper, magnetite, magnetic iron sand, hematite, iron ores, iron pyrites, native iron, antimony ore, galena, blonde, barytes, mica, magnesite, kermesite, celestine, albite, orthoclase, asbestos, amethyst, agates, and Canadian rocks.	100
b Coal from Saskatchewan river, bituminous shale, crude and inspissated petroleum.	101
c Sandstones, marbles, marble column, dolomite, limestone, syenite, granite, gneiss, labradorite, jasper conglomerate, ornamental and polished slate, cut and polished stones.	102
d Hydraulic cement, gypsum.	103
e Clay, fire clay, clay for moulding, river and moulding sand, soapstone.	104
f Graphite.	105
g Lithographic stones, grindstones, whetstones, buhr stones, granite for mill-stones.	106
h Brine, mineral water, phosphate of lime, shell marl.	107
10 Oppenheimer Bros., Victoria, Br. Col.—Gold nugget.	100
11 Robertson, Robt., Halifax, N. S.—Representation of the gold fields of Nova Scotia.	100
12 Donaldson, T. B., Oldham, N. S.—Gold in quartz.	100
13 Sibley, A. H., Silver Islet, Ont.—Silver ores and native silver.	100
14 McKellar Bros., Fort William, Ont.—Silver ores, native silver, copper pyrites, and barites.	100
15 Marks, T., & McKellar Bros., Fort William, Ont.—Silver ores.	100
16 Dawson, S. J., Ottawa, Ont.—Silver ores.	100
17 Cyrette, Ambrose, Fort William, Ont.—Silver ores.	100
18 Van Norman, Judge, Prince Arthur's Landing, Ont.—Native silver and silver ores.	100
19 Plumber, McIntyre, & Russ, Fort William, Ont.—Silver ores.	100
20 Eames, Prof., Pie Island, Ont.—Silver vein-stone.	100
21 Stephen, George, Montreal, Q.—Silver ores.	100
22 Eureka Mining Co., Victoria, Br. Col.—Silver ores.	100
23 Mechanics' Institute, N. Westminister, Br. Col.	
a Platinum.	100
b Anthracite.	101
24 West Canada Mining Co., Wellington, Ont.—Copper pyrites, copper ore.	100
25 Hime, H. L., Toronto, Ont.—Copper pyrites.	100
26 Plumber, B., Bruce Mine, Ont.—Copper pyrites.	100
27 Oliver, Geo., Perth, Ont.—Copper pyrites, bog iron ore.	100
28 Ontario Advisory Board, Toronto, Ont.	
a Copper pyrites, magnetic hematite, galena.	100
b Serpentine, syenite.	102
c Graphite.	105
d Emery.	106
e Phosphate of lime, shell marl.	107
29 Shaw, P., Harvey Hill, Q.—Copper pyrites.	100
30 Stewart, W. W., Montreal, Q.—Native copper.	100
31 Douglas, Dr., Quebec, Q.—Copper ore.	100
32 Davidson, Wm., Alma, N. B.—Copper glance.	100
33 Russell, Grand Manan, N. B.—Copper glance.	100
34 Cole, Rufus, Dorchester, N. B.—Copper glance.	100
35 Sweet, R. J., Halifax, N. S.—Copper glance.	100
36 Lloyd, H. C., Madoc, Ont.—Magnetite, hematite.	100
37 Ledyard, T. D., Toronto, Ont.—Magnetite.	100
38 Haycock, Will., Templeton, Q.—Magnetite.	100

Minerals, Coal, Oil.

- 39 Cobourg & Petersboro' Iron Co.,** Belmont, Ont.—Magnetite. 100
- 40 Bishop, A., Bell's Corners, Ont.—** Magnetite. 100
- 41 Foley, James, Bathurst, Ont.—** Magnetite with apatite. 100
- 42 Baldwin, A. H., Hull, Q.—** Magnetite. 100
- 43 Chipman, David, Berwick, N. S.—** Magnetite. 100
- 44 Lewis, Queen Charlotte's Island,** Br. Col.—Magnetite. 100
- 45 Cowan, A., Brockville, Ont.**
a Hematite, burnt iron pyrites. 100
b Phosphate and superphosphate of lime. 107
- 46 Crawford, J. D., & Co., Montreal, Q.—** Hematite, spathic iron ore. 100
- 47 Genther, O., St. Urbain, Q.—** Titanic iron ore. 100
- 48 Matheson & Gilice, Sydney, N. S.—** Hematite. 100
- 49 Ross, N. S.—Hematite.** 100
- 50 Webster, N. S.—Hematite.** 100
- 51 Blanchard, N. S.—Hematite.** 100
- 52 Ottawa Iron and Steel Co., Ottawa,** Ont.—Iron ore. 100
- 53 Stobie, James, Sault St. Marie, Ont.—** Iron ore. 100
- 54 Duval, H. H., Quebec, Q.—** Titanic iron ore. 100
- 55 McDougall, John, Three Rivers, Q.—** Bog iron ore. 100
- 56 Steel Co. of Canada, Londonderry,** N. S.—Iron ores. 100
- 57 MacKinnon, J. C., Whycocomagh,** N. S.—Iron ores. 100
- 58 Dubamel, Dr., Quebec, Q.—** Iron pyrites. 100
- 59 Russell, Willis, Lotbiniere, Q.—** Antimony ore. 100
- 60 Hibbard, F., Prince William, N. B.—** Antimony ore. 100
- 61 Hime, L. H., Toronto, Ont.—** Galena and copper pyrites with silver and gold. 100
- 62 Sibley, Col., & J. McIntyre, Silver Islet, Ont.—Galena.** 100
- 63 Johnson, C. J., Wallaceburg, Ont.—** Galena, blonde. 100
- 64 Devine, Thos., Toronto, Ont.—** Galena. 100
- 65 Wearne, Capt., Toronto, Ont.—** Galena, blonde. 100
- 66 Markham, A., Hammond, N. B.—** Pyrolusite. 100
- 67 Brown, J., N. S.—Pyrolusite.** 100
- 68 Galway Lead Mining Co., Galway,** Ont.—Barytes, calc spar. 100
- 69 Dolphin Manufacturing Co., Five Islands, N. S.—Barytes.** 100
- 70 Starr, John, Halifax, N. S.—** Barytes. 100
- 71 Baker Mine, North Burgess, Ont.—** Mica in plates. 100
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THE SUNDAY SCHOOL TIMES

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FRANCE.—STATISTICAL PREFACE.

FRANCE is the most westerly state of Central Europe, extending from $42^{\circ} 20'$ to $51^{\circ} 5'$ north latitude, and from $7^{\circ} 45'$ east to $4^{\circ} 45'$ west longitude. It is bounded on the north by the Channel and the Straits of Dover, which separate it from England, by Belgium, the grand duchy of Luxembourg; on the east by Germany, Switzerland, and Italy, on the south by the Mediterranean and Spain, from which it is separated by the Pyrenees, and on the west by the Atlantic Ocean (the Bay of Biscay). The greatest length of France, from Dunkirk, in the north, to the Col de Falguere, in the south, is about 620 miles; its greatest breadth from east to west, from the boundary line in the Vosges to Cape St. Matthieu, in Finisterre, is about 550 miles. The superficial area of France, including the two Savoy provinces and Corsica, is reckoned at about 201,600 square miles. The possessions of France, which are situated in the non-European parts of the world, have a total superficial area of 463,827 square miles, and the largest is Algeria, with an area of 258,310 square miles. France is divided into 86 departments. The total population, exclusive of Algeria and the colonies, was given (in 1872) at 36,102,921.

The colonies and foreign possessions of France in Africa are Algeria, Senegambia, the islands of Bourbon (Reunion), St. Marie, Mayotte, and Nussi-be, in the Indian Ocean, and Gaboon, on the coast of Guinea. The total possessions in Africa cover an area of about 270,000 square miles, with a population of 2,840,000 souls. In America are the islands of Martinique and Guadalupe in the West Indies, French Guiana, or Cayenne, with St. Pierre and Miquelon, near Newfoundland; forming together an area of 45,000 square miles, with a population of 345,000. In Asia, the Indian settlements of Pondicherry, Mahe, Karikal, Yanaon, and Chaudernagore, comprise 19,600 square miles, with a population of 265,000. A settlement has also

been made in Cochin China, embracing 21,700 square miles and 1,336,000 inhabitants, and a protectorate declared over the Empire of Anam. In the Pacific Ocean are two groups, the Marquesas and Tahiti, and New Caledonia, with the Loyalty Isles, the whole forming an area of 11,182 square miles, with 87,000 inhabitants.

The following table gives the population, in 1872, of some of the largest cities in France:

Paris,	1,850,000
Lyons,	323,000
Marseilles,	313,000
Bordeaux,	194,000
Lille,	158,000
Toulouse,	125,000
Nantes,	119,000
St. Etienne,	111,000
Rouen,	102,000

There are four great mountain chains belonging to France—the Pyrenees which separate the French territory from Spain; the Cevenne-Vosgian range, running north and south between the Moselle and the new boundary line; the Alps, which separate the Swiss territory from the provinces of Savoy and Nice; and the Sardo-Corsican range which belongs, as the name implies, to the islands of Sardinia and Corsica. The highest peaks in the Pyrenees are the Maladetta and Mont Perdu (10,886 feet and 10,994 feet); in the Cevenno-Vosgian range, the greatest height (the Widderkalm) does not greatly exceed 7000 feet. The French portion of the Alps now includes several of the highest mountains and most elevated passes of the ranges, as Mont Blanc, 15,744 feet; Mont Iseran, 13,272 feet; Mont Cenis, 11,457 feet; and the pass of Little St. Bernard, 7190 feet, etc. In Corsica, the highest peak rises to an elevation of 9000 feet. The grand water-shed of France is the Cevenno-Vosges chain, which determines the direction of the four great rivers, the Seine, the Loire, the Garonne, and the Rhone; the first three of which flow northwest into the Bay of Biscay and the English Channel, and the fourth into the Gulf of Lyons.

The entire extent of river navigation in France amounts to 5500 miles, or 8,900,000 metres, while the 99 larger canals, which have been constructed either to connect the various river courses or to supply entirely new channels of water communication, extend over a length of 2900 miles, or 4,700,000 metres. The most important of these works are the canals connecting Nantes and Brest, and the Rhone with the Rhine, and those of Berry, Nivernais, and Bourgogne.

France is peculiarly rich in mineral springs, of which there are said to be nearly 1000 in use. Of these, more than 400 are situated in the group of the Pyrenees, where there are 93 establishments for their systematic use. It is estimated that there are, moreover, fully 4000 springs not hitherto employed.

According to M. Maurice Block's estimate, the physical and agricultural character of the soil of France may be comprised under the following heads:

	HECTARES.*
Mountainous districts, heaths, and commons,	9,944,839
Rich land,	7,276,399
Chalk, or lime districts,	9,788,197
Gravel, stony and sandy,	15,951,618
Clay, marshy, miscellaneous,	9,807,577
	52,768,600

* The hectare is equal to about 2.47 English acres.

The same writer further subdivides the soil of France, according to its actual employment, under the following heads:

	PER CENT. OF THE WHOLE ACRE.
Arable lands,	48.3
Meadow lands,	9.7
Vineyards,	3.7
Cultivated lands,	17.8
Roads, streets, public walks, etc.,	3.7
Forest and unproductive lands,	16.8

France possesses one of the finest climates in Europe, although, owing to its great extent of area, very considerable diversities of temperature are to be met with. The mean annual temperature of different parts of France has been estimated as follows, by Humboldt: Toulon, 62° F.; Marseilles, 59.5°; Bordeaux, 56°; Nantes, 55.2°; Paris, 51.2°; Dunkirk, 50.5°.

The following are the statistics of agricultural productions for the year 1869:

	HECTOLITRES.*
Wheat,	108,000,000
Rye,	24,000,000
Barley and oats,	90,000,000
Maize,	10,000,000
Potatoes,	100,000,000

The production of beet-root sugar in 1872-73 amounted to 418,000 tons. The average yearly produce of the vineyards of France is estimated at about 50,000,000 of hectolitres (about 1,000,000,000 of gallons). Of this about one-seventh is made into brandy.

The principal forest trees are the chestnut and beech on the central mountains, the oak and cork tree in the Pyrenees, and the fir in the Landes. The destruction of the national forests has been enormous within the last two centuries, but measures have been taken in recent years to plant wood, in order to protect those mountain slopes which are exposed to inundations from mountain torrents, and to provide a supply for the ever-increasing demand for fuel. About one-seventh of the entire territory of France is still covered with wood. Turf taken from the marshy lands is extensively used, more especially in the rural districts, for fuel.

According to the census of 1866—the most recent in regard to animals—there were in France 3,312,637 horses, 518,000 asses, 350,000 mules, 12,733,000 horned cattle, 30,386,000 sheep, 5,500,000 swine, and 1,680,000 goats. There were, according to the *Statistique Agricole* for 1858, about 3,000,000 of beehives, valued at rather more than 24,000,000 of francs; the mean annual returns are, for honey, 6,670,000, and for wax, 1,620,000 kilogrammes.† Poultry constitutes an important item of farm produce in France, estimated at 45,500,000 of francs, while the eggs and feathers yield 35,250,000 of francs.

The following figures show the condition of the merchant navy of France on the 31st of December, 1873:

	TONNAGE.	MEN.
Sailing vessels,	15,043	882,866
Steam vessels,	516	185,165
	<hr/>	<hr/>
	15,559	1,068,031
		98,989

The *cabotage*, or internal coasting traffic, is a great source of financial wealth to the State, to which all rivers and canals belong. In 1873, it employed 2776 vessels, with a tonnage of 122,850 and an equipment of 10,871.

* The hectolitre equals 2.75 bushels.

† The kilogramme equals 2.2 pounds avoirdupois.

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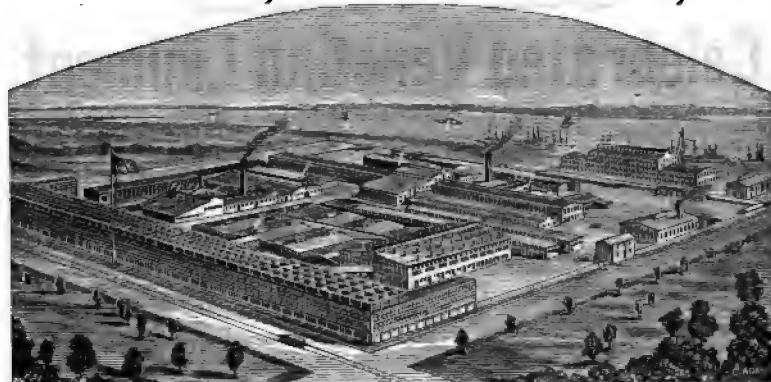
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The chief mineral products of France are coal and iron, in the excavation of which nearly 250,000 men were employed in 1868. The production of coal in 1868 was 132,000,000 of quintals, the quintal being equal to 1.97 hundredweight. During the same year, there were 150 iron mines in operation, yielding 34,500,000 of quintals, more than half of this quantity being obtained from the five departments of Haute-Marne, Haute-Saone, Cher, Moselle, and Nord. Argentiferous galena, a little silver and gold, copper, lead, manganese, antimony, and tin occur, but hitherto their working has not proved very productive. The department of Charente-Inferieure yields the largest amount of salt, the mean annual produce being 1,500,000 of quintals (2,500,000 of francs), which is fully one-third of the entire annual produce of the whole country. France derives about 41,000,000 of francs from its quarries of granite and freestone, its kaolin, marbles, sands, lithographic stones, millstones, etc. Granite and syenite are found in the Alps, Vosges, Corsica, Normandy, and Burgundy; porphyry in the Vosges; and basalt and lava, for pavements, in the mountains of Auvergne. Marble is met with in more than 40 departments; alabaster occurs in the Pyrenees; the largest State quarries are near Cherbourg and St. Lo.

The following list gives an approximate estimate of the value of the chief products of French industry:

	MILLIONS OF FRANCS.
Linen fabrics,	250
Cotton fabrics,	650
Woolen fabrics,	950
Silk fabrics,	1000
Mixed fabrics,	330
Jewelry, watchmaking,	35
Gilt wares,	12
Minerals, mines, salt, etc.,	600
Articles of food, as sugar, wines, etc.,	364
Skins, leather, oils, tobacco,	556
Bone, ivory, glass, etc.,	30
Chemical products,	80
Ceramic arts,	86
Paper, printing,	60
Forests, fisheries,	98

The total imports, for 1873, were 4,576,000,000, and the total exports, for the same year, 4,822,000,000 of francs.

France was proclaimed a republic on the 4th of September, 1870. According to the law of February 25th, 1875, the legislative power is vested in the two Houses, the Chamber of Deputies and the Senate. The Chamber of Deputies is elected by universal suffrage. The Senate is composed of 300 members, 225 of whom are elected by the departments and the colonies, and 75 by the National Assembly. The President of the republic is elected by a majority of the votes of the Senate and Chamber of Deputies, united as the National Assembly. His term of office is for seven years, and he is eligible for re-election.

According to the budget for 1876, the estimated receipts for the year are put down at 2,575,028,582 francs, and the expenditures at 2,570,505,513. The public debt is 23,403,000,000 francs.

The nominal strength of the army, on a peace footing, is given in the latest government returns as 490,332 men; on a war footing, 1,750,000.

The navy of France was composed, at the end of 1873, of 62 ironclads, 264 unarmored screw steamers, 62 paddle steamers, and 113 sailing vessels.

According to the official report for December, 1874, the railways in operation measure 20,711 kilometres, or about 12,866 miles. With the exception of less than 500 miles, the railways of France are held by six companies, which are under the superintendence of the State.

The number of letters forwarded by the post office, in 1874, was 341,068,000; newspapers, postal cards, and parcels, 331,786,000.

At the end of 1873, there were 45,942 kilometres of lines of telegraphs, comprising 123,669 kilometres of wire. The number of messages sent, in 1873, was 6,225,000, of which nearly one-fourth were international messages. There were annual deficits since the establishment of the public telegraph department, in March, 1851. There were 2206 telegraph offices at the end of 1873.

Public instruction is presided over in France by a special ministry. Nearly half the expenses connected with it are defrayed by the State, and the remainder by the departments. There are 15 academies, located in the following towns: Aix, Besançon, Bordeaux, Caen, Clermont, Dijon, Douai, Grenoble, Lyon, Montpellier, Nancy, Paris, Poitiers, Rennes, Toulon. These academies are divided into the five faculties of theology, law, medicine, sciences, and literature, and supplemented by various superior and preparatory schools. The professors are paid partly by the State and partly by fees. Secondary instruction has received an immense impetus during the present century. The different departments share very unequally in the diffusion of education, and it may be generally observed that the proportion of the educated is highest in the northern and eastern districts of France. France supports numerous colleges and schools for instruction in special branches of knowledge. There are also numerous agricultural, forest, farming, and veterinary schools, besides the Ecole Polytechnique, specially designed to prepare youths for the public services; and military and naval colleges at St. Cyr, Saumur, Paris, Vincennes, Brest, Toulon, and St. Denis.

Paris possesses several libraries belonging to, and supported by, the State, but freely opened to the public. There are 338 public libraries in the provinces, to all of which access is afforded, in the most liberal spirit. France is rich in public galleries of painting, statuary, and articles of *vertu*. The expenses of secondary and primary education, literary and scientific institutions, etc., are charged in the budget for 1876 at 44,912,545 francs.

(Detailed information as to the colonial dependencies of France will be found under the appropriate headings in other portions of the catalogue.)

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The French exhibits in Mining and Metallurgy are installed in the Agricultural Building, and catalogued in Volume IV.

GERMANY.—STATISTICAL PREFACE.

THE German Empire occupies the central portion of Europe, and extends from 6° to $22^{\circ} 40'$ east longitude and $49^{\circ} 7'$ to $55^{\circ} 50'$ north latitude. It is bounded on the north by the German Ocean, the Danish Peninsula, and the Baltic; on the east by Russia and Austria; on the south by Russia, Austria, and Switzerland, and on the west by France, Belgium, and the Netherlands. The population (1871) is about 41,000,000. Its area is estimated at 208,000 square miles, or about one-sixteenth of that of all Europe. The coast line measures about 950 miles.

Germany is composed of an aggregation of 26 different States. The following list gives the names of these States, their population, area, and the number of members representing each in the Bundesrath, or Federal Council, and the Reichstag, or Imperial Diet:

STATES.	POPULATION IN 1871.	AREA IN SQUARE MILES.	NO. OF MEMBERS IN BUNDESRATH.	NO. OF DEPUTIES IN REICHSTAG.
Kingdoms :				
1. Prussia,	24,601,307	139,751	17	236
2. Bavaria,	4,863,450	29,280	6	48
3. Saxony,	2,556,244	5,780	4	23
4. Wurtemburg,	1,818,539	7,532	4	17
Grand Duchies :				
5. Baden,	1,461,562	5,850	3	14
6. Hesse,	852,894	2,962	3	9
7. Mecklenburg-Schwerin, . . .	557,897	5,136	2	6
8. Saxe-Weimar,	286,183	1,403	1	3
9. Mecklenburg-Strelitz,	96,982	1,130	1	1
10. Oldenburg,	314,777	2,470	1	3
Duchies :				
11. Brunswick,	311,764	1,425	2	3
12. Saxe-Meiningen,	187,884	955	1	2
13. Saxe-Altenburg,	142,122	510	1	1
14. Saxe-Coburg-Gotha,	174,339	760	1	2
15. Anhalt,	203,437	896	1	2
Principalities :				
16. Schwarzburg-Rudolstadt, . . .	75,523	367	1	1
17. Schwarzburg-Sondershausen, . .	67,191	332	1	1
18. Waldeck,	56,224	438	1	1
19. Reuss (altere Linie),	45,094	123	1	1
20. Reuss (jungere Linie),	89,032	320	1	1
21. Schaumburg-Lippe,	32,059	170	1	1
22. Lippe-Detmold,	111,135	438	1	1
Free Towns :				
23. Lubeck,	52,158	110	1	1
24. Bremen,	122,402	97	1	1
25. Hamburg,	338,974	158	1	3
26. Alsace-Lorraine,	1,549,459	5,590		
	41,058,632	208,613	58	382

The *Almanac de Gotha*, for 1876, divides the population of the German Empire, in regard to nationality, as follows: Germans, 37,820,000; Poles, 2,450,000; Wends, 140,000; Czechs, 50,000; Lithuanians and Courlanders, 150,000; Danes, 150,000; French and Walloons, 210,000. The Germans admit of being divided into high and low Germans; the phraseology of the former is the cultivated language of all the German States; that of the latter, known as *Platt-Deutsch*, is spoken in the north and northwest. The Poles are found exclusively in the east and northeast of Prussia; the Czechs in Silesia, about Appeln and Breslau; the Wends, in Silesia, Brandenburg, and Prussian Lusatia; the Lithuanians and Courlanders in east Prussia; the Danes, in Schleswig; the Walloons, about Aix-la-Chapelle, in Rhenish Prussia, and the French, partly in the same region, and in Alsace and Lorraine.

Germany presents two very distinct physical formations. First, a range of high table land, occupying the centre and southern parts of the country, interspersed with numerous ranges and groups of mountains, the most important of which are the Harz and Teutoburger in the north, the Taunus and Thuringerwald in the middle, and the Schwarzwald and Raube Alps in the south, and containing an area, including Alsace and Lorraine, of 110,000 square miles. Second, a vast sandy plain, which extends from the centre of the empire north to the German Ocean, and including Schleswig-Holstein, contains an area of about 98,000 square miles. This great plain, stretching from the Russian frontier on the east to the Netherlands on the west, is varied by two terrace-like elevations. The one stretches from the Vistula into Mecklenburg, at no great distance from the coast of the Baltic, and has a mean elevation of 500 to 600 feet, rising in one point near Danzig to 1020 feet; the other line of elevations begins in Silesia, and terminates in the moorlands of Lüneberg, in Hanover, its course being marked by several summits from 500 to 800 feet in height. A large portion of the plain is occupied by sandy tracts, interspersed with deposits of peat; but other parts are moderately fertile, and admit of successful cultivation.

In respect of drainage the surface of Germany belongs to three different basins. The Danube, from its source in the Schwarzwald to the borders of Austria, belongs to Germany, and through this channel the waters of the greater part of Bavaria are poured into the Black Sea, thus opening up communication with the east. The greater part of the surface, however (about 185,000 square miles), has a northern slope, and belongs partly to the basin of the North Sea, and partly to the basin of the Baltic. The chief German streams flowing into the North Sea are the Rhine, the Weser, and the Elbe; into the Baltic, the Oder and the Vistula.

The most important of the numerous canals of Germany are the Ludwig's canal, in Bavaria, connecting the Danube and Main, and thus opening a communication between the Black Sea and the German Ocean; the Finow and Friedrich Wilhelm's canals, in Brandenburg; the Plaue canal, connecting the Elbe and the Havel; and the Kiel and Eyder canal, uniting the Baltic and the German Ocean. Numerous lakes occur both in the table-land of southern Germany, and in the lowlands of the northern district, but few of them are of any great size. Mineral springs occur principally in Nassau, Wurtemburg, Baden, Bavaria, and Rhenish Prussia. Many of these springs have retained their high reputation from the earliest ages.

The climate of Germany presents less diversity than a first glance at the map might lead one to infer, for the greater heats of the more southern latitudes are considerably modified by the alpine character of the country in those parallels, while the cold of the northern plains is mitigated by their vicinity to the ocean. The average decrease in the mean temperature is in going from south to north, about 1° F. for every 52 miles; and in going from west to east, about 1° F. for every 72 miles. The line of perpetual snow varies from 7200 to 8000 feet above the level of the sea. The mean annual fall of rain is 20 inches.

The following table shows the mean temperature at different points:

	MEAN ANNUAL TEMPERATURE.	SUMMER.	WINTER.
Hamburg,	47.	64	30
Dresden,	48.	67	29
Frankfort-on-the-Main,	48.5	66	31
Berlin,	46.5	66	27
Hanover,	48.	63	33
Königsberg,	43.	62	24

Germany is rich in mineral products, among which the most important are silver, found in the Hartz mountains; iron in numerous mountain ranges; salt in many parts of the country; coal in Rhenish Prussia, Silesia. Cobalt, arsenic, sulphur, salt-petre, alum, gypsum, bismuth, pumice-stone, tripoli-slate, kaolin, emery, ochre, and vitriol, are all among the exports of Germany.

The following figures show the product of the principal mining industries of Germany (exclusive of Alsace and Lorraine) for the year 1870:

	NO. OF WORKS.	PERSONS EMPLOYED.	PRODUCT IN CWT.	VALUE IN THALERS.
Coal (including brown coal),	1362	145,782	680,060,074	61,863,399
Iron ore,	1258	24,793	58,550,539	7,116,828
Zinc ore,	72	9,797	7,335,603	2,315,429
Lead ore,	174	18,057	2,111,810	5,511,235
Copper ore,	3	6,156	4,147,627	1,619,938

The yield of salt, for the same year, was 14,658,990 hundredweight, from 69 works, employing 4610 persons, and valued at 3,926,650 thalers.

The leading products of the metallurgical industries are given as follows:

	WORKS.	PERSONS EMPLOYED.	AMOUNT PRO- DUCED IN CWT.	VALUE IN THALERS.
Cast iron,	631	39,525	29,942,264	49,251,650
Wrought iron (including wire, bars, and manufactured iron of various kinds),	354	43,849	17,437,766	57,490,284
Steel,	216	12,892	3,399,027	22,747,626
Zinc,	53	6,256	1,727,570	10,212,259
Silver,	10	1,601	(lbs.) 185,847	5,549,943
Lead (products of),	17	1,513	1,195,753	6,951,164
Copper,	28	1,971	174,687	4,667,535

The entire production of mines, furnaces, salt works, etc., is given as 824,965,732 hundredweight, valued (including 186,270 pounds of gold and silver) at 246,482,099 thalers.

The vegetable products comprise a very large proportion of the European flora. All the ordinary cereals are extensively cultivated in the north, and largely exported, chiefly from Wurtemberg and Bavaria; hemp and flax, madder, woad, and saffron grow well in the central districts, where the vine, the cultivation of which extends in suitable localities as far north as 51°, is brought to greater cultivation—the best wine-producing districts being the valleys of the Danube, Rhine, Main, Neckar, and Moselle, which are, moreover, generally noted for the excellence of their fruits and vegetables. Tobacco is grown in sufficient quantities for extensive exportation on the Upper Rhine, the Werra, and Oder. The hops of Bavaria have a high reputation, and the chicory grown in that country and in the district between the Elbe and

the Weser finds its way all over Europe as a substitute for coffee. The average annual product of cereals is approximately as follows:

Rye,	89,000,000	hectolitres.*
Oats,	87,000,000	"
Wheat,	34,000,000	"
Barley,	30,000,000	"

The average annual potato crop amounts to 272,000,000 hectolitres. The production of beets, in 1872, was over 61,000,000 hundredweight. A fair yield of wine is about 4,500,000 hectolitres, and of tobacco, about 700,000 hundredweight.

The most extensive forests are found in central Germany, and in some parts of Prussia, while the northwestern parts of the great plain are deficient in wood, the place of which is in some degree supplied by the abundance of turf yielded by the marshy lands. Germany has long been noted for the good breed of horses raised in the northern parts of the continent, while Saxony, Silesia, and Brandenburg have an equal reputation for their sheep-flocks, and the fine quality of the wool which they yield. The rich alluvial flats of Mecklenburg and Hanover are celebrated for their cattle; the forests of northern and central Germany abound in swine, and in small game of various kinds; while the Bavarian Alps afford shelter to the larger animals, as the chamois, the red deer and wild goat, the fox, marten, and wolf.

According to the last enumeration of live stock, there were in Germany 3,500,000 horses, 15,000,000 cattle, 30,000,000 sheep, 8,000,000 swine, and 2,000,000 goats. The wool crop for 1869 amounted to 750,000 hundredweight.

Among the fishes of Germany, the most generally distributed are carp, salmon, trout, and eels; the rivers contain also crayfish, pearl-bearing mussels, and leeches. The oyster, herring, and cod fisheries constitute important branches of industry on the German shores of the Baltic and North Seas.

The preservation and cultivation of woods receive almost as much attention in Germany as agriculture, and, like the latter, are elevated to the rank of a science. The larger woods and forests in most of the states belong to the government, and are under the care of special boards of management, which exercise the right of supervision and control over all forest lands, whether public or private. The value of the forests of Germany was, in 1873, estimated at 666,000 thalers.

The oldest and most important of the German industrial arts are the manufactures of linen and woolen goods. The chief localities for the cultivation and preparation of flax, and the weaving of linen fabrics, are the mountain valleys of Silesia, Lusatia, Westphalia, the Harz, and Saxony (for thread laces); while cotton fabrics are principally made in Rhenish Prussia and Saxony. The same districts, together with Pomerania and Bavaria, manufacture the choicest woolen fabrics, including damasks and carpets. Toys, wooden clocks, and wood-carvings, which may be regarded as almost a specialty of Germany industry, are carried to the greatest perfection in the hilly districts of Saxony, Bavaria, and the Black Forest. The best iron and steel manufactures belong to Silesia, Hanover, and Saxony. Silesia probably possesses the finest glass manufactories; while Saxony and Prussia stand pre-eminent for the excellence of their china and earthen wares. Augsburg and Nuremberg dispute with Munich and Berlin the title to pre-eminence in silver, gold, and jewelry work, and in the manufacture of philosophical and musical instruments; while Leipzig and Munich claim the first rank for type foundries, printing, and lithography. The trading cities of northern Germany nearly monopolize the entire business connected with the preparation of tobacco, snuff, etc., the distillation of brandies, and the manufacture of sugar from the beet, potato, and other roots; while vinegar and oils are prepared almost exclusively in central and southern Germany.

The constitution of the empire is confederate, under the presidency of the King of Prussia, who bears the hereditary title of German Emperor. He has the right

* The hectolitre equals 2.75 bushels.

and duty of representing the empire in all respects or international law, of declaring war in the name of the empire, making peace and treaties, etc. For a declaration of war the consent of the Bundesrath is necessary. He is the commander-in-chief of the whole army and navy, in peace as well as in war, except the military powers of Wurtemberg and Bavaria, which—in times of peace only—form separate corps under the command of their respective kings. He names and dismisses the officers and functionaries of the empire. His orders, issued in the name of the empire, must be countersigned by the Chancellor, who, as the first minister of the empire, is by his signature responsible for them.

The legislative powers lie in the *Bundesrat* and the *Reichstag*. The former consists of the delegates of the confederate governments, representing in all fifty-eight votes. The Reichstag has 382 members directly elected by the secret ballot of the people. The bills promulgated by these two assemblies in accordance are compulsory on all governments of the empire, and annul *eo ipso* all possible institutions contradictory to them in the several States.

The empire has no debt. The debts of the separate States amounted, in 1873, to 1,093,800,000 thalers, 589,300,000 of which sum was for railways.

The army consists, on a peace footing, of about 400,000 men; on a war footing, of about 1,300,000. The navy comprises 51 vessels, of which number 47 are steamers, of 77,130 horse-power, 64,198 tons burthen, and carrying 321 guns; and 4 sailing vessels (1 frigate and 3 brigs) mounting 36 guns.

The multiplicity of small States into which Germany was long broken up, opposed great obstacles to the development of commerce; but the difficulty has to some extent been obviated by the establishment of the *Zollverein*, or "Customs confederation." The Hanse Towns, Hamburg and Bremen, do not belong to it, being free ports; but it comprises all the other states of the empire and the grand duchy of Luxembourg.

The estimated value of goods exported, imported, and in transit (by the customs lines) for 1873 was as follows:

Imports,	4,257,300,000 marks.
Exports,	2,489,000,000 "
In transit,	1,233,000,000 "

The merchant navy comprised, in 1873, 4748 vessels, including 253 steamers, with a total of 1,201,358 tonnage.

The railways measured, in 1871, about 13,310 English miles; but these figures represent the length, not of the lines within the limits of the German Empire, but of those which are under German administration, though extending some way into neighboring States.

The various telegraphic lines of the empire (excepting those of Bavaria and Wurtemburg) are now under a central administration, and, in 1874, the whole measured 42,571 kilometres; length of wires, 149,410 kilometres; number of messages, 13,422,511; number of offices, 4992.

The post office forwarded in 1874:

Private letters,	521,900,000
Postal cards,	47,900,000
Official letters,	37,700,000
Parcels, etc.,	89,700,000
	697,200,000
Newspapers,	349,600,000
Number of offices,	7,900

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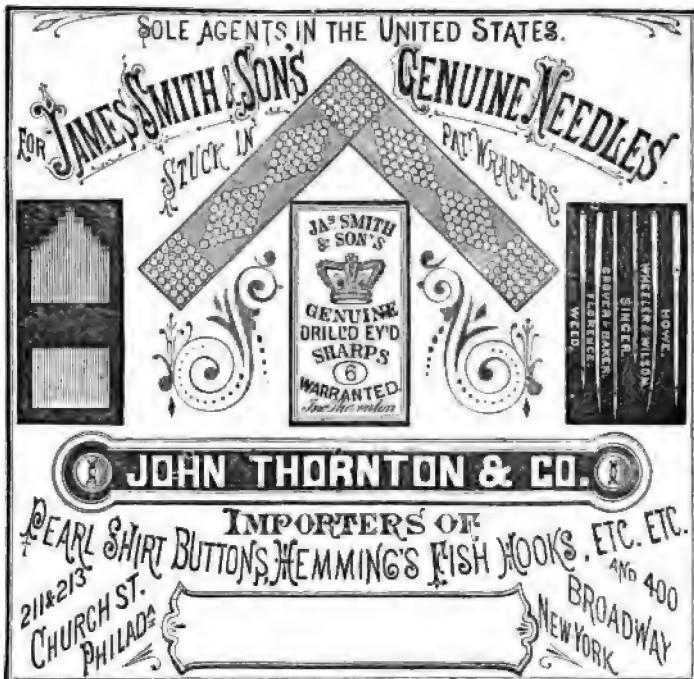


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least four or five years, is made compulsory in nearly all the German States, and hence the proportion of persons who cannot read and write is exceedingly small in Germany.

The elementary schools are 60,000 in number, and are attended by 6,000,000 pupils between the ages of six and fourteen. Of the middle schools, including 330 gymnasia and 214 pro-gymnasia and Latin schools, there were in 1873 over 1000, attended by 177,379 pupils. There are 21 universities, with (in 1873) 1620 instructors and 17,858 students. Of polytechnic schools there are ten, with 360 instructors and 4500 students. Besides these there are numerous special schools of technology, agriculture, commerce, mining, metallurgy, military science, navigation, trades, etc. The German academies of art and sciences and conservatories of music enjoy a world-wide reputation. Public libraries—of which there are more than one hundred and fifty—museums, botanical gardens, art collections, and picture galleries are to be met with in most of the capitals and many of the country towns.

Commission from the GERMAN EMPIRE to the International Exhibition:

DR. JACOBI, Royal Prussian Actual Privy Superior Government Counsellor and Ministerial Director, President.
 DR. STUVE, Royal Prussian Privy Government Counsellor and Counsellor in the Ministry of Commerce.
 DR. WEDDING, Royal Prussian Counsellor of Mines.
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 MR. VON NOSTITZ WALLWITZ, Royal Saxon Envoy Extraordinary and Minister Plenipotentiary.
 BARON VON SPITZEMBERG, Royal Wurtemberg Envoy Extraordinary and Minister Plenipotentiary.
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 MR. KAUFMANN, Royal Prussian Counsellor of Commerce.
 DR. KRUGER, Hanseatic Minister, Resident.
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 MR. NIEBERDING, Counsellor in the Office of the Chancellor of the Empire.
 BARON VON ZEDLITZ, Royal Prussian Provincial Counsellor.

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MR. BARTELS, Engineer and Architect.	

GERMANY.

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AUSTRIA.—STATISTICAL PREFACE.

THE Austrian Empire forms, on the whole, a compact territory with a circumference of about 5349 miles. It is included between 42° to 51° north latitude, and between $8^{\circ} 20'$ to $26^{\circ} 20'$ east longitude. The body of the empire lies in the interior of the European continent, though, by means of the southern projection of Dalmatia, it has about 1200 miles of sea-coast on the Adriatic. With the rest of its circumference, it borders on the States of the Church, Modena, Parma, Italy, Switzerland, Bavaria, Saxony, Prussia, Russia, Moldavia, Wallachia, Servia, Turkey, and Montenegro. Its present provinces embrace an area of 241,123 square miles, and a population which, in 1869, amounted to 35,904,435.

The following table gives the area, number of civil inhabitants, and total population, civil and military, of the various provinces of the empire—distinguishing its two great political divisions, the German monarchy, or Cisleithan Austria, and the Hungarian kingdom, or Transleithan Austria, together with the so-called military frontier, placed under the administration of the ministry of war for the whole empire—according to the official returns for 1869:

PROVINCES.	AREA IN ENGLISH SQ. MILES.	CIVIL POPULATION.	TOTAL POPULATION.
GERMAN MONARCHY.			
Lower Austria,	7,658	1,954,251	1,990,708
Upper Austria,	4,634	731,579	736,557
Salzburg,	2,768	151,410	153,159
Styria,	8,674	1,131,309	1,137,990
Carinthia,	4,007	336,400	337,694
Carniola,	3,858	403,273	446,334
Coast Land,	3,085	582,079	600,525
Tyrol and Vorarlberg,	11,321	878,907	885,789
Bohemia,	20,763	5,106,069	5,140,544
Moravia,	8,579	1,997,897	2,017,274
Silesia,	1,988	511,581	513,352
Galicia,	30,320	5,418,016	5,444,683
Bukowina,	4,037	511,964	513,404
Dalmatia,	4,942	442,796	456,061
Total German Monarchy,	116,634	20,217,531	20,934,980
KINGDOM OF HUNGARY.			
Hungary,	82,867	11,117,623	11,118,502
Croatia and Slavonia,	7,445	1,160,085	1,164,806
Transylvania,	21,222	2,101,727	2,115,024
Military Frontier,	12,956	1,037,892	1,041,123
Total Hungary,	124,490	15,417,327	15,509,455
Total Austro-Hungary,	241,124	35,634,858	35,904,435

Three-fourths of Austria is mountainous or hilly, being traversed by three great mountain chains—the Alps, Carpathians, and Sudetes, whose chief ridges are of primitive rock. The Alps are accompanied, north and south, by parallel ranges of calcareous mountains, covering whole provinces with their ramifications. The Carpathians are lapped on their northern side by sandstone formations; mountains of the

same character also occupy Transylvania. Springing from the northwest bend of the Carpathians, the Sudetes run through the northeast of Moravia and Bohemia, in which last the range is known as the Riesen gebirge, or Giant mountains. Continuous with this range, and beginning on the left bank of the Elbe, are the Erzgebirge, or Ore mountains, on the confines of Saxony; and veering round to nearly southeast, the range is further prolonged in the Bohemian Forest mountains, between Bohemia and Bavaria. The chief plains of the Austrian empire are: the great plains of Hungary (the smaller of these is in the west, between the offsets of the Alps and Carpathians, and is about 4200 square miles in extent; the other, which is in the east, and traversed by the Danube and the Theiss, has an area of 21,000 square miles), and the plains of Galicia.

From the south point of Dalmatia to the boundary of Italy, Austria has a sea-line of about 1000 miles, not counting the coasts of the numerous islands, the largest of which is Veglia, 23 miles by 12. The chief lakes are: the Platten See, and the Neusiedler See, both in Hungary. The first is navigable by steamers, and both are rich in fish, and have fruitful vineyards around them. The Alps and Carpathians inclose numerous mountain lakes, which are surrounded with wood and rock, and all the other attributes of picturesque scenery. The Long lake in the Tatra mountains lies at an elevation of 6000 feet. The most remarkable of all is the Zirknitz lake, in Illyria. There are extensive swamps or morasses in Hungary. One connected with the Neusiedler See covers some 80 square miles. A good deal has been done in the way of reclaiming lands by draining morasses.

The leading rivers that have navigable tributaries are: the Danube, which has a course of 849 miles within the Austrian dominions, the Vistula, the Elbe, and the Dniester. The Rhine bounds Austria for about fourteen miles above Lake Constance.

The climate of Austria is on the whole very favorable; but from the extent and diversity of surface, it presents great varieties. In the warmest southern region, between 42° to 46° latitude, rice, olives, oranges, and lemons ripen in the better localities; and wine and maize are produced everywhere. In the middle temperate region from 46° to 49° , which has the greatest extent and diversity of surface, the vine and maize still thrive in perfection. In the northern region, beyond 49° , except in favored spots, neither the vine nor maize succeeds; but grain, fruit, flax, and hemp, thrive excellently. The mean temperature of the year is, at Trieste, 58° F.; at Vienna, 51° ; at Lemberg, in Galicia, 44° .

The raw products of Austria are abundant and various; and in this respect it is one of the most favored countries in Europe. Its mineral wealth is not surpassed in any European country; it is only lately that Russia has exceeded it in the production of gold and silver. Mining has been a favorite pursuit in Austria for centuries, and has been encouraged and promoted by the government. Bohemia, Hungary, Styria, Carinthia, Salzburg, and Tyrol, take the first place in respect of mineral produce. Except platina, none of the useful metals is wanting. The mines are partly State property, and partly owned by private individuals. Gold is found chiefly in Hungary and Transylvania, and in smaller quantity in Salzburg and Tyrol. The same countries, along with Bohemia, yield silver. The discovery of quicksilver at Idria first brought this branch of mining industry into importance. This metal is now also found in Hungary, Transylvania, Styria, and Carinthia. Copper is found in many districts—tin, in Bohemia alone. Zinc is got chiefly in Cracow and Carinthia. The most productive lead mines are in Carinthia. Iron is found in almost every province of the monarchy, though Styria, Carinthia, and Carniola are chief seats. The production, though great, is not yet equal to the consumption. Antimony is confined to Hungary; arsenic is found in Salzburg and Bohemia; cobalt in Hungary, Styria, and Bohemia; sulphur in Galicia, Bohemia, Hungary, Venice, Salzburg, etc., though not enough to supply home consumption. Graphite is found abundantly in Bohemia, Moravia, Carinthia, etc.

The useful earths and building-stones are to be had in great profusion ; all sorts of clay up to the finest porcelain earth (in Moravia, Bohemia, Hungary, Venice), and likewise marble, gypsum, chalk, etc. Of precious and semi-precious stones are the Hungarian opal, which passes in commerce as oriental, Bohemian garnets—the finest in Europe—cornelians, agates, beryl, amethyst, jasper, ruby, sapphire, topaz, etc.

The following table shows the principal metals and minerals produced in Austria in 1867, and their average value in florins at the place of production :

	WEIGHT.	VALUE IN FLORINS.
Gold (Austrian pound),	3,562	2,406,041
Silver "	81,378	3,655,643
Quicksilver (Austrian hundredweight),	5,944	723,958
Tin " "	591	33,812
Zinc " "	40,296	495,956
Copper " "	47,930	4,377,840
Lead and litharge " "	136,668	1,770,884
Iron, raw and cast " "	5,705,761	16,709,039
Graphite " "	279,355	271,123
Mineral coal " "	108,488,390	17,322,283

Austria is peculiarly rich in salt. Rocksalt exists in immense beds on both sides of the Carpathians, chiefly at Wieliczka and Bochnia, in Galicia, and in the country of Marmaros in Hungary, and in Transylvania. The annual produce of rock-salt is greatly above three million hundredweight. Salt is also made at State salt-works by evaporating the water of salt-springs. The chief works are those at Hallstadt, Ischl, Hallein, and Hall in Tryol. From two to three millions hundredweight are thus produced annually. A considerable quantity is also made from sea-water on the coast of the Adriatic. Of other salts, alum, sulphate of iron, and sulphate of copper are the chief. Austria has abundance of mineral springs, frequented for their salubrity ; 1600 are enumerated, some of them of European reputation, as the sulphurous baths of Baden, in lower Austria, the saline waters of Karlsbad, Marienbad, and Ofen, etc.

The vegetable productions, as might be expected from the vast diversity in the soil and position of the different provinces, are extremely various. Although three-fourths of the surface is mountainous, more than five-sixths is productive, being used either for tillage, meadows, pasture, or forest. Grain of all kinds is cultivated most abundantly in Hungary and the districts south of it on the Danube, in Bohemia, Moravia, Silesia, and Galicia. Agriculture is not yet far advanced ; the prevailing system is still what is called the three-field system, introduced into Germany by Charlemagne, in which a crop of winter wheat is followed by one of summer grain, and that by fallow.

In Hungary, the Magyar adheres to his primitive husbandry ; the German and Slave are adopting improved methods. Rice is cultivated in the Banat, but not enough for the consumption. Potatoes are raised everywhere ; and in elevated districts, are often the sole subsistence of the inhabitants. Horticulture is carried to great perfection ; and the orchards of Bohemia, Austria proper, Tyrol, and many parts of Hungary, produce a profusion of fruit. Great quantities of cider are made in upper Austria and Carinthia, and of plum brandy in Slavonia. In Dalmatia, oranges and lemons are produced, but not sufficient for the requirements of the country ; twice as much olive oil is imported as is raised in the monarchy.

In the production of wine, Austria is second only to France. With the exception of Galicia, Silesia, and upper Austria, the vine is cultivated in all the provinces ; but Hungary stands first, yielding not only the finest quality of wine, but four-fifths the amount of the whole produce of the empire. The average produce of the whole empire is estimated at about 680 millions of gallons.

Of plants used in manufactures and commerce, the first place is held by flax and

hemp. Flax is cultivated almost universally; white hemp in Galicia, Moravia, Hungary, etc. Tobacco is raised in great quantities, especially in Hungary, which also is first in the cultivation of rapeseed. Bohemia raises hops of the first quality, which are partly exported, though other provinces import from abroad. The indigo plant has lately been successfully acclimatized in Dalmatia. More than a third of the productive surface is covered with wood (75,000 square miles), which, besides timber, yields a number of secondary products, as tar, potash, charcoal, bark, cork, etc.

As to animals, bears are found in the Carpathians, Alps, and Dalmatia; wolves, jackals, and lynxes in these same districts, and also in the Banat, Croatia, Slavonia, and the military frontiers. The marmot, otter, and beaver are also found in Dalmatia. Game has of late sensibly diminished. The wild goat lives in the highest, the chamois and white Alpine hare in the middle regions of the Alps and Carpathians. More productive than the chase are the fisheries of the Danube, Theiss, and numerous streams, lakes, and ponds. The chief sea-fishing is in Dalmatia. Leeches, procured chiefly in Hungary and Moravia, form an article of considerable trade. For foreign commerce, the most important branch of rural industry is the rearing of silk.

Austria produces about a quarter a million of silk cocoons annually. The silk trade is very extensive on the Tyrol—the yearly supply of cocoons in that country being about 32,000.

In 1851, the number of horses in the monarchy was stated at 3,229,884 (not including 75,000 belonging to the army); cattle, 10,410,484; sheep, 16,801,545; goats, 2,275,900; and swine, 7,401,300. Nearly three-fourths of the population are engaged in husbandry, so that Austria is decidedly an agricultural State, though its capabilities in this respect have by no means been fully developed.

The annual value of its manufactures—not including small trades—is estimated at 1000 to 1200 millions of florins, while that of its husbandry may reach 3000 millions. Bohemia takes the lead in this industry; then follow Austria proper, Moravia and Silesia, Hungary. Vienna is the chief seat of manufacture for articles of luxury; Moravia, Silesia, and Bohemia for linen, woolen, and glass wares; Styria and Carinthia for iron and steel wares. The chief manufactured articles of export are silken and woolen; the only others of consequence are linen, twist, glasswares, and cotton goods. The yearly value of manufactured iron is about fifty-four millions of florins. The glasswares of Bohemia are of special excellence. The hemp and flax industry is one of the oldest and still most important.

No branch of industry has risen more rapidly than that of cotton. The annual value of the silk industry is estimated at about sixty millions of florins. The manufacture of tobacco is a State monopoly, and produced a revenue in 1873 of 58,126,000 florins. The salt monopoly secured 18,720,000 florins.

The imports for the year 1874 were 565,600,000 florins; the exports were 452,200,000 florins. This is exclusive of Dalmatia—not within the imperial line of customs. The figures for Dalmatia were, during the same year: 9,600,000 florins imports, and 6,600,000 florins exports.

The merchant navy, at the beginning of 1875, comprised 7203 vessels, with a tonnage of 332,005, and an equipment of 27,381 seamen. Of great importance for the commerce of the empire is the Austrian Lloyds. This company owned, on the 1st of January, 1874, a fleet of seventy-six steamers, of 15,800 horse-power.

Since the year 1867 Austria has been a twofold empire, consisting of a German or "Cisleithian" monarchy—Austria proper; and a Magyar or Transleithian kingdom—Hungary. Each of the two countries has its own laws, parliament, ministers, and government; and the formal tie between them is a body known as the Delegations. These form a parliament of 120 members; one-half is chosen by the legislature of Austria, and the other by that of Hungary, the upper house of each returning twenty, the lower house forty delegates. The delegations have jurisdiction over all

matters affecting the common interests of the two countries, especially foreign affairs, war, and finance. The acts of the delegations require to be confirmed by the representative assemblies of their respective countries.

The administration of Austria proper is divided among nine ministries—Foreign Affairs, Police, Public Education, Agriculture and Public Works, Finance, Interior, War and Navy, Commerce, and Justice. The Reichsrath consists of an upper and a lower house. The upper house is constituted by princes, nobles, archbishops, bishops, and life members nominated by the emperor. To give validity to bills passed by the Reichsrath, the consent of both chambers is required, as well as the sanction of the emperor.

The executive of Hungary is carried on in the name of the king by a responsible ministry.

The budget for 1875 gives, for Austria proper,

Total expenditures,	382,231,049
" receipts,	373,089,899
Deficit,	<u>9,141,150</u> florins.
For Hungary—Total expenditures,	233,804,075
" receipts,	212,138,518
Deficit,	<u>21,665,557</u> florins.

The public debt of Austria, on the 1st of January, 1875, was 2,649,484,475 florins; that of Hungary, January 1st, 1873, was 488,717,380 florins.

According to official returns, Austria possessed, in 1875, a standing army numbering 284,435 men on the peace footing, and 785,649 on the war footing.

The naval forces consisted of sixty-nine vessels, of a tonnage of 115,380, carrying 263 heavy and 87 light guns. Of this fleet, 47 vessels were steamers, of 100,260 tons burthen, carrying 263 heavy and 87 light guns.

The length of railways, at the close of 1875, was

In Austria,	9,823	kilometres.
" Hungary,	6,415	"
Total,	16,238	"

The work of the post office in Austria-Hungary for 1874 was as follows :

Letters,	253,909,000
Postal cards,	28,741,000
Parcels,	31,959,000
Newspapers,	82,085,000
Number of post offices,	6,296

The statistics of telegraphs for the year 1874 are as follows :

Length of lines (Austria-Hungary),	45,441	kilometres.
" " wires " "	129,171	"
Number of offices,	2,923	"
" of dispatches,	5,797,492	"

Education, since 1849, is under the care of a Minister of Public Worship and Instruction. In the major part of German Austria the law enforces the compulsory attendance in the "Volksschulen," or National Schools, of all children between the ages of six and twelve, and parents are liable to punishment for neglect. It is rarely, however, that cases occur in which penalties for non-attendance at school have to be enforced. The cost of public education mainly falls on the communes, but of late

years the State has come forward to assist in the establishment of schools for primary education.

There are seven universities in the empire. Four of these, the high schools at Vienna, Prague, Graz, and Innsbruck, are called German universities, and were attended as follows, in 1872:

	PROFESSORS AND TEACHERS.	STUDENTS.
Vienna,	200	3881
Prague,	97	1709
Graz,	70	926
Innsbruck,	58	612

Of the other universities, Pesth, the high school of Hungary, had 2500 students at the end of 1873, and Cracow and Lemberg, the high schools for Galicia and the other Slavonian provinces, had, at the same date, together, 1900 students.

Commission from AUSTRIA to the International Exhibition:

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MICHAEL MATSCHEKO, Manufacturer, Second Vice-President.

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DR. F. MIGERKA, Imperial and Royal Counsellor.

THEO. A. HAVEMEYER, Austro-Hungarian Consul-General.

AUSTRIA.

(South of Nave, Columns 23 to 28.)

Mining and Metallurgy.

Minerals, Ores, Stone, Mining Products.

- 1 Fric, V., Prague.—Minerals, fossils. 100
- 2 Tugoviz, A., Klagenfurt.—Ore and mining products of Karthen. 100
- 3 Chief Mountain and Mining Administration, Pozoritta, Bukowina.—Pyrolusite for aniline pigments for soda factories, German silver ware, and manganese products. 100
- 4 Loos, Adolf, Brunn.—Moravian white marble, manganese. 102
- 5 Muhsdorf Graphite Factory, Muhsdorf, near Spitz, Lower Austria.—Graphite. 105
- 6 Genthe, Adolph, Lichtenau, near Gföhl, Lower Austria.—Graphite. 105

7 Legrady, Joseph, Vienna.—Glaziers' diamonds and artificial steel glass cutters. 106

8 Nedwied & Son, Schian, Bohemia.—Red chalk, red-lead pencils. 107

9 Saxlehner, Andreas, Budapest.—Hunyadi János mineral water. 107

10 Mineral Water Direction, Pulina, near Brüx, Bohemia.—Mineral water. 107

11 Loser Bros., Budapest.—Genuine mineral water from the Ofen-Rakoczy spring. 107

Metallurgical Products.

- 12 Industry Association in Krain, Laibach.—Iron and steel mountain and mining works. Ferro-manganese and spiegel iron. 111

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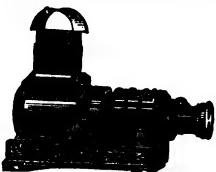
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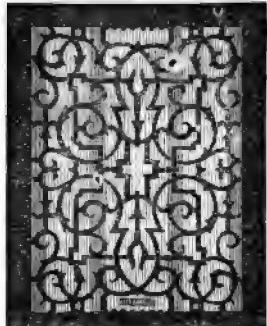
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SWITZERLAND.—STATISTICAL PREFACE.

SWITZERLAND is an inland country of Europe, situated between $45^{\circ} 48'$ and $47^{\circ} 49'$ north latitude, and $5^{\circ} 55'$ and $10^{\circ} 30'$ east longitude. Its greatest length from east to west is 180 miles, and its greatest width from north to south, 130 miles.

The following table gives the area and population of each of the 22 cantons, according to the census returns of 1870:

	ENGLISH SQUARE MILES.	POPULATION.
Graubunden,	2,968	91,782
Bern,	2,561.5	506,465
Wallis (Valais),	1,661.6	96,887
Vaud (Waadt),	1,181.9	231,700
Ticino (Tessin),	1,034.7	119,619
St. Gallen,	747.7	191,015
Zurich,	685.3	284,786
Luzern,	587.4	132,338
Fribourg (Freeburg),	563.9	110,832
Aargau,	502.4	198,873
Uri,	420.8	16,107
Schwyz,	338.3	47,705
Neuchatel (Neuenburg),	280.2	97,284
Glarus,	279.8	35,150
Thurgau,	268.3	93,300
Unterwalden,	262.8	26,116
Solothurn,	254.6	74,713
Basle,	184.6	101,887
Appenzell,	152.8	60,635
Schaffhausen,	119.7	37,721
Geneve (Genf),	91.3	93,239
Zug,	85.4	20,993
Total,	15,233.0	2,669,147

Switzerland is the most mountainous country of Europe. Its principal chains are the Alps and the Jura. The former run from east to west along its southern or Italian frontier. Their ramifications fill more than one-half the country, and terminate along a line which may be traced from Vevey, on the lake of Geneva, to Mount Moleson and Mount Napf, across Lake Zug, to the southern shores of the lakes of Zurich and Wallenstadt, and Sargans on the Rhine. The mean elevation of the highest chain is from 8000 to 9000 feet. The Jura run northeast from the western corner of Switzerland. They consist of a series of parallel ridges inclosing long and narrow valleys, and their mean elevation does not exceed 4000 feet. In the angle formed between them and the Alps lies the plain of Switzerland, a table-land 100 miles in length, and from 20 to 30 miles in width, with a mean elevation of about 1400 feet above the sea. It is not absolutely level, but covered with elevations which seem very unimportant when contrasted with the huge masses of the Alps and Jura. The communication between the plain of Switzerland and the German valleys of the Danube and Rhine is not continuous. The plain terminates in the east in a third hilly tract, the Thur hill country, which lies between the lakes of Zurich and Constance, and, to some extent, forms a barrier between the plain of Switzerland and Germany. The Jura, the plain, and the hill country, are the three great divisions of northern Switzerland. The divisions in the Alpine region are more strongly marked.

in nature. They isolate and inclose (1) the valleys drained by the Rhone which connect Switzerland with southern France; (2) Ticino, drained by streams which descend to the Po, and bring this section into communication with Italy; (3) the Grisons, the most sequestered valleys of Switzerland, drained by the tributaries of the Rhine and Danube, and shut out by mountains from the lower basins of these rivers; (4) Bernese Oberland, which slopes towards the western extremity of the Swiss plain; (5) the district of the Forest Cantons, Schwyz, Uri, and Unterwalden, surrounding the Lake of Lucerne.

In Switzerland the climate chiefly varies with the elevation above the sea level. At a height exceeding 9500 feet the mountains are covered with perpetual snow, which descends along the glaciers to a much lower level, and thus covers the elevated part of the country with a vast sea of ice. Below the level of perpetual snow the surface of Switzerland has been divided into a series of belts, characterized by different climates and productions. The highest of these, lying between the snow and the level of 6000 feet, has been called the Upper Alpine region. In it the glaciers fill the valleys, but plants clothe the scanty soil of the ridges. The second or Lower Alpine belt descends to 4800 feet, and is a country of pastures in which shrubs, but no trees, are seen. In the third belt, which descends to 4350 feet, meadows still abound, but forests of firs and maples, in many parts, replace them. The fourth belt sinks to 3000 feet. Here forests still abound, the beech being the prevailing tree; the meadows are excellent, and rye and barley are successfully cultivated. The fifth belt descends to 1800 feet. In it the oak and walnut are the characteristic forest trees. Spelt and the best wheat are cultivated. The last belt sinks to 750 feet. In it the chestnut is the characteristic tree; the mulberry and vine are extensively cultivated, and wheat is the grain chiefly grown. This belt includes the greater part of the Swiss plain, and sinks to its lowest level in the valley of the Rhine, between Constance and Basle, and the banks of Lake Zurich and Lago Maggiore. In the last district the vegetation is that of northern Italy. The most populous part of Switzerland lies between 1250 and 2500 feet. The temperature of this region is fairly represented by that of Zurich, which averages, for the year, 47.95°.

The German language is spoken by the majority of the inhabitants in sixteen cantons, the French in four, and the Italian in two. It is reported in the census returns of 1870 that 384,561 families speak German, 134,183 French, and 30,293 Italian. According to the same returns there were but five towns in Switzerland with more than 20,000 inhabitants, namely, Geneva, seat of the watch and jewelry industry, with 46,783; Basle, centre of the silk industry, with 44,834; Bern, political capital, with 36,001; Lausanne, with 26,520; and Zurich, with 21,199 inhabitants. The soil is pretty equally divided among the population, it being estimated that four-fifths of the inhabitants are land owners. Of every 100 square miles of land 20 are pasture, 17 forest, 11 arable, 20 meadow, 1 vineyard, and 30 uncultivated, or occupied by lakes, rivers, and mountains.

According to the census of 1870 there are 1,095,447 individuals supported, either wholly or in part, by agriculture. At the same date, the manufactories employed 216,468 persons, the handicrafts 241,425. In the canton of Basle the manufacture of silk ribbons employs 6000 persons, with a total annual production valued at \$7,000,000. In the canton of Zurich silk stuffs, to the value of about \$8,000,000, are made by 12,000 operatives. The manufacture of watches and jewelry in the cantons of Neuchatel, Geneva, Vaud, Bern, and Solothurn, employ 36,000 workmen, who produce annually 500,000 watches—three-sevenths gold, four-sevenths silver—valued at \$9,000,000. In the cantons of St. Gall and Appenzell, 6000 workers make \$2,000,000 worth of embroidery annually. The printing and dyeing factories of Glarus turn out goods to the value of \$30,000 per annum. The manufacture of cotton goods occupies upwards of 1,000,000 spindles, 4000 looms, and 20,000 operatives, besides 38,000 hand-loom weavers.

The Federal custom house returns classify all imports and exports under three chief headings, namely, live stock, *ad valorum* goods, and goods taxed per quintal. No returns are published of the value of imports or exports: only the quantities are given. The following table shows the imports and exports during the year 1871:

IMPORTS.

Live stock,	256,851 head.
Agricultural instruments, carts, and railway carriages for travelers and merchandise, <i>ad valorum</i> ,	1,043,991 francs.
Goods taxed per quintal, including loads reduced to quintals,	25,450,359 quintals.

EXPORTS.

Live stock,	127,490 head.
Wood and coal, <i>ad valorum</i> ,	5,351,941 francs.
Goods, per load and quintal,	4,086,646 quintals.

The present constitution vests the supreme legislative and executive authority in a parliament of two chambers, a Standerath, or State Council, and a Nationalrath, or National Council. The first is composed of 44 members, chosen by the 22 cantons—2 for each canton. The Nationalrath consists of 135 representatives, chosen by popular vote, at the rate of one deputy for every 20,000 souls. A general election for representatives takes place every three years. Both chambers united are called the Bundesversammlung, or Federal Assembly, and as such represent the supreme government of the republic. The chief executive authority is deputed to a Bundesrath, or Federal Council, consisting of seven members elected for three years by the Federal Assembly. The president and vice-president of the Federal Council are the first magistrates of the republic. Both are elected by the Federal Assembly for the term of one year, and are not re-eligible until after the expiration of another year. Independent of the Federal Assembly, though issuing from the same, is the Bundes-Gericht, or Federal Tribunal, consisting of eleven members, elected for three years. The Federal Tribunal decides, in the last instance, on all matters in dispute between the various cantons, or between the cantons and the Federal government, and acts in general as a high court of appeal. Each of the Swiss cantons and demi-cantons has its local government, different in organization in most instances, but all based on the absolute sovereignty of the people.

In the budget estimates for the year 1875 the total revenue is set down at 39,516,000 francs,* and total expenditure at 39,266,000 francs. The public debt of the republic amounted, at the commencement of 1875, to 30,635,552 francs, as a set-off against which there was a so-called Federal fortune, or property belonging to the State, valued at 31,783,303 francs.

The fundamental laws of the republic forbid the maintenance of a standing army within the limits of the confederation. The troops are divided into three classes: 1, the Bundes-Auszug, or Federal army, consisting of all men able to bear arms from the age of 20 to 30; 2, the army of reserve, consisting of all men who have served in the first class, from the age of 31 to 40; 3, the Landwehr, or militia, comprising all men from the 41st to the completed 44th year. The strength of the armed forces of Switzerland, at the end of 1874, was as follows:

Staff,	841
Bundes-auszug,	84,369
Reserve,	50,069
Landwehr,	65,981
Total,	201,260

* One franc = 19.3 cts. gold.

SWITZERLAND.

From official returns it appears that the railways open for public traffic in Switzerland had, at the end of 1874, a total length of 1024 English miles.

The post office of Switzerland forwarded, during the year 1874, 63,252,884 letters; 19,925,200 packets, and 45,651,344 newspapers.

At the end of September, 1875, there were 3736 miles of telegraph lines and 9538 miles of wires. The number of messages sent, in the year 1874, was 2,625,104; number of offices, 815. The entire telegraph system belongs to the State.

In no country is elementary instruction more widely diffused. Parents are compelled to send their children to school from five to eight, but not above that age. There are universities on the German model at Basle, Bern, and Zurich, and academies on the French plan at Geneva and Lausanne. The number of clubs for scientific, literary, musical, and social purposes, is remarkable. There are few pursuits to which any class of men can devote themselves which are not represented in Switzerland by societies.

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SWITZERLAND.

(North of Nave, Columns 52 to 55.)

Minerals, Metallurgical Products.

Minerals, Ores, Stone, Mining Products.

1 Neuchatel Asphalte Co., Limited, Travers, Ct. Neuchâtel.—Natural and mastic asphalt. 101

2 Zbinden, F., Lausanne, Ct. Vaud.—Anti-oxyd. 106

(The minerals illustrating the geological formations traversed by the St. Gotthard tunnel are classified in this catalogue, together with the other exhibits of the St. Gotthard Railroad Co., under Dept. III, Class 332.)

Metallurgical Products.

3 Bürgin Bros., Schaffhausen.—Phosphate of bronze, different compositions, with strength and fracture tests. 114

BELGIUM.—STATISTICAL PREFACE.

BELGIUM lies between latitude $49^{\circ} 27'$ and $51^{\circ} 30'$ north, and between longitude $2^{\circ} 33'$ and $6^{\circ} 5'$ east. It is bounded on the north by Holland; on the east by Dutch Limbourg, Luxembourg, and Rhenish Prussia; on the south and southwest by France; and on the northwest by the North Sea. Its greatest length, from northwest to southeast, is 173 English miles; and its greatest breadth, from north to south, 112 English miles. The whole area is 11,313 square miles. The following table gives a list of the provinces in Belgium, with the area, population, and chief town of each:

PROVINCES.	AREA IN SQ. MILES.	POPULATION (1870).	CHIEF CITIES.
Antwerp,	1,094	492,482	Antwerp.
West Flanders,	1,243	668,976	Bruges.
East Flanders,	1,154	837,726	Ghent.
Hainault,	1,430	866,285	Mons.
Liege,	1,111	592,177	Liege.
Brabant,	1,260	879,814	Brussels.
Limbourg,	929	200,336	Hasselt.
Luxembourg,	1,695	205,784	Arlon.
Namur,	1,397	313,525	Namur.
Total,	11,313	5,087,105	

Belgium is the most densely populated country in Europe, the population being about 404 to the square mile; and in the particular provinces of East Flanders, Brabant, Hainault, and West Flanders, respectively, not less than 675,594,537, and 502 to the square mile. The mural population bears to that of the towns a proportion of about 3 to 1. About 58 per cent. of the inhabitants are Flemish, the rest Walloon and French, with 39,000 Germans in Luxembourg. Belgium is, on the whole, a level and even low-lying country; diversified, however, by hilly districts. In the southeast, a western branch of the Ardennes highlands makes its appearance, separating the basin of the Maas from that of the Moselle, but attains only the moderate elevation of 2000 feet. In Flanders the land becomes so low that in parts where the natural protection afforded by the downs is deficient, dikes, etc., have been raised to check the encroachments of the sea. In the northeast part of Antwerp, a naturally unfertile district named the Campine, and composed of marshes and barren heaths, extends in a line parallel with the coast. The once impassable morasses of the *Morini* and the *Menapii*, which stayed the progress of Caesar's legions, are now drained, and converted into fertile fields, surrounded by dense plantations, which make the land at a distance look like a vast green forest—though, when more closely regarded, we see only numerous dwellings interspersed among fields, canals, and meadows.

The abundant water-system of Belgium is chiefly supplied by the rivers Scheldt and Maas, both of which rise in France, and have their embouchures in Holland. At Antwerp, the Scheldt, which, like the Maas, is navigable all through Belgium, is 32 feet deep, and about 480 yards wide. Its tributaries are the Lys, Dender, and Rupel. The Maas, or Meuse, receives in its course the waters of the Sambre, the Ourthe, and the Roer. These natural hydrographical advantages are increased by a system of canals which unite Brussels and Louvain with the Rupel, Brussels with Charleroi, Mons with Conde, Ostend with Bruges and Ghent, and this last place with Terneuse. The climate of Belgium, in the plains near the sea, is cool, humid, and somewhat unhealthy; but in the higher southeast districts, hot summers alternate with very cold winters. April and November are always rainy months. The geological formations

of Belgium are closely associated with France and Britain. The greater portion of the country is covered with tertiary deposits. A line drawn across the course of the Scheldt, by Mechlin, along the Demer and Maas, will have on its northern and northwestern aspect a tract of tertiary deposits, bounded northwards by the sea. In these tertiary strata the different geological periods are fully represented; but only the second, containing the Pleiocene deposits, is rich in fossils. The secondary deposits occupy an extensive tract in the centre of Belgium, between the Scheldt and the Demer. The most important district, economically, is the southwestern, consisting of palæozoic rocks—Silurian, Devonian, and Carboniferous. These beds have a very complicated structure, from the numerous and extensive flexures and folds they have undergone, and these are often accompanied with great upward shifts, by which beds of many different ages are brought to the same level. Belgium is rich in minerals, which, next to its abundant agriculture, constitute the chief source of its national prosperity. The four provinces in which they are found are Hainault, Namur, Liege, and Luxembourg. They include lead, copper, zinc, calamine, alum, peat, marble, limestone, slate, iron, and coal. Lead is wrought, but only to a small extent, in Liege; copper in Hainault and Liege; manganese in Liege and Namur; black marble at Dinant; slates at Herbemont; and calamine principally at Liege. But these products are insignificant compared to the superabundance of coal—from anthracite to the richest gas coal—and iron.

In the year 1871, the total coal production of Belgium amounted to 13,733,176 tons, of a total value of 153,803,000 francs. Number of hands employed in the coal mines of Belgium, 94,186. The average daily pay of the workmen, in 1871, was 2½ francs per day; average cost of production, 9½ francs per ton of coal. The Ardennes districts yield a large supply of wood; while the level provinces raise all kinds of grain—wheat, rye, barley, oats, etc., leguminous plants, hemp, flax, colza, tobacco, hops, dye-plants, and chicory. Belgium contains upwards of 7,000,000 acres, of which one-half is arable, rather more than one-fifth in meadow and pasture, the same in woods and forests, and not above 500,000 acres lying waste. Some hundreds of acres are devoted to vineyards, but the wine produced is of an inferior quality. The forests of Ardennes abound in game and other wild animals. Good pasturage is found on the slopes and in the valleys of the hilly districts, and in the rich meadows of the low provinces. Gardening occupies not less than 130,000 acres; indeed, it has been said that the agriculture of Belgium is just gardening on a large scale, so carefully and laboriously is every inch of soil cultivated. The spadé is still the principal instrument used. In the Campine, the care of bees is very productive, and the cultivation of the silkworm is encouraged. There are valuable fisheries on the coast, which, in 1871, employed 263 boats, with a tonnage of 8963. Belgium is famous for its horses, and in one year contained 294,537 of these animals, 1,203,891 horned cattle, and 662,508 sheep.

Wool is the object of an immense industry, the woolen manufactures of Verviers and its environs alone employing a population of 50,000 operatives. Flannels, serges, camlets, carpets, flax fabrics, silks, velvets, fine laces, ribbons, hosiery, hats, paper, etc., are extensively and profitably manufactured. The working of metals, as iron, copper, and tin, is very important; the manufacture of cannon, firearms, and locomotive engines being an especial feature of the metallurgical industry of Belgium.

The foreign trade of Belgium is officially divided into "general commerce," including the sum total of all international mercantile intercourse, and "special commerce," comprising such imports as are consumed within and such exports as have been produced in the country. The following table gives the value of both the general and special exports for the year 1873:

General imports,	2,424,800,000 francs.
" exports,	2,164,600,000 "
Special imports,	1,422,700,000 "
" exports,	1,158,600,000 "

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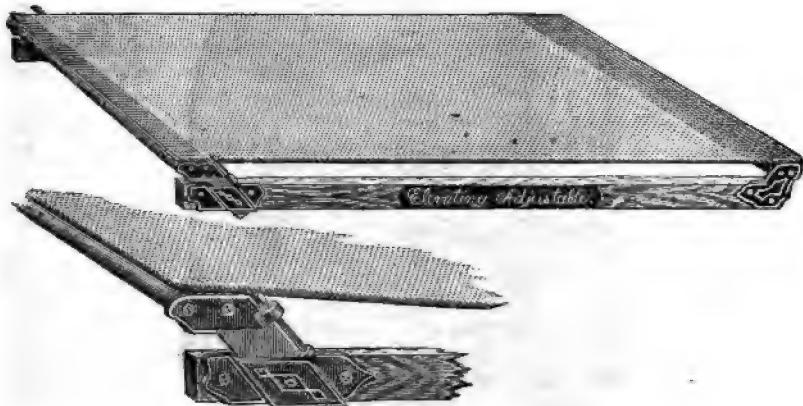
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The statistics of the Belgian merchant navy for 1873, are—

	NO.	TONNAGE.
Sailing vessels,	41	16,434
Steam "	28	30,005
Total,	69	46,439

Belgium is a constitutional, representative, and hereditary monarchy. The legislative power is vested in the King, the Chamber of Representatives, and the Senate. The Chamber of Representatives is composed of deputies chosen directly by all citizens paying a small amount of direct taxes. The number of deputies is fixed according to the population, and cannot exceed one for every 40,000 inhabitants. The Senate is composed of exactly one-half the number of members composing the other chamber, and are elected by the same citizens who appoint the deputies. The public expenditures of Belgium, for 1875, were 238,281,441 francs; receipts during the same year, 243,032,600 francs. The total public debt, in 1875, was 1,127,040,009 francs. The standing army is formed by conscription, to which every able-bodied man, who has completed his nineteenth year, is liable. Substitution is permitted. The actual number of soldiers under arms, on the 1st of January, 1875, was 103,893.

In Belgium the State is a great railway proprietor, and the State railway is one of the largest sources of national revenue. As each conceded railway lapses gratuitously to the State in 90 years from the period of its construction, the entire system will in time become national property. There were, at the end of 1875, 1953 kilometres of railways owned by the State, and 1479 worked by companies; in all 3432 kilometres. (The kilometre = 1093 yards.)

The work of the post office for 1874, was—

Number of offices,	479
Private letters,	58,036,628
Official "	6,035,861
Newspapers,	58,825,598
Packets (printed matter, etc.),	30,094,027

There were, on the 1st of January, 1875, telegraph lines of a length of 4909 kilometres; length of telegraph wires, 20,512 kilometres; telegraph stations, 574.

Elementary education is not yet generally diffused among the people. The schools are supported by the communes, the provinces, and the State combined. Education is not compulsory. In the budget for the year 1874, the sum voted by the Chamber of Representatives for public education amounted to 9,701,628 francs.

Commission from BELGIUM to the International Exhibition :

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CH. DE SMET-DE SMET, Manufacturer, President of the Industrial and Commercial Society, Vice-President.

I CLERFEYLT, Chief of Bureau, Ministry of the Interior, Secretary of the Upper Consul of Industry and Commerce, late Secretary of the Belgium Commission and Juries of the International Exhibition of Paris, London, and Vienna, Secretary.

ALFRED ANCION, Manufacturer of Arms.

A. J. BELPAIRE, Inspector-General of Railways and Telegraphs.

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- REMY PAQUOT, Director of the Company of Bleyberg-es-Montzen.
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BELGIUM.

(North of Nave, Columns 54 to 59.)

Minerals, Metallurgical Products.

Minerals, Ores, Stone, Mining Products.	
1 Bleyberg es Montzen Joint Stock Co., Montzen, Province of Liége.—Zinc and lead ore.	100
2 Vincent Sons, Basècles (Hainaut).—Samples of Basècles black marble pavements.	102
3 Ville de Spa (Communal Administration).—Trophy furniture, showing views of the city and environs, plans of mineral water-works, samples of these waters, articles of export, etc. The painting of this furniture was executed by Messrs. Boland, Chas., Bronfort, H., Crehey, senior, G. I., Debrus, Alexandre, Debrus, Alexis, Krins, E., Marcette, Henri, and Reijer, L.	107
Metallurgical Products.	
4 Bonhill Bros., L'Esperance High Furnace Forge Foundry, Marchienne-au-Pont, near Charleroi.—Ornamental iron.	103
5 Constant, Emile, Monceau-sur-Sambre, near Charleroi.—Patterns of ornamental iron spring and web iron.	103
6 Jowa, Delheid, & Co., Liège.—Rough cast iron patterns, rolled iron, iron wire, corrugated and galvanized sheet iron, bridge platforms, flooring, etc.	102
7 Mabille, Valère, Mariemont (Hainaut).—Manufactured iron, Kind Chaudron shaft-sinking apparatus	103
8 Paris, Isaac Joseph, Marchiennes, near Charleroi.—Iron riveted beams for ship-building.	103
9 Charleroi Iron Manufacturing Joint Stock Co., Marchienne-au-Pont, near Charleroi.—Iron for building, etc.	103
10 Providence Forge Joint Stock Co., Marchienne-au-Pont, near Charleroi.—Iron for building, iron wheels without welding.	103
11 Forge and Rolling Mill Joint-stock Co., Régissa, near Huy.—Polished and unpolished sheet iron by wood and coke.	103
12 Angleur Steel Manufacturing Co., F. de Rossius, Pastor & Co., Renory, near Liége.—Bessemer cast steel products, rails, tires, axles, forge pieces, and rolled bars.	103
13 Jammepes Forge Foundry and Rolling Mill Co., V. Demerbe & Co., Jammepes (Hainaut).—Broken bar-bended iron, tramway rails, system of tramway rails on cast iron sleepers.	103
14 Bivort, Raymond, Henri, Arbre, Province of Namur.—Kettles and copper wire.	102
15 Bleyberg es Montzen Joint Stock Co., Montzen, near Verviers.—Prepared zinc and lead ore, potters' ore (pure galena) for glazing, pig lead for rolling mill, white lead and crystals, silver ore, block zinc for rolling, galvanizing, etc.	103

NETHERLANDS.—STATISTICAL PREFACE.

THE Kingdom of the Netherlands lies between $50^{\circ} 43'$ and $53^{\circ} 36'$ north latitude and $3^{\circ} 22'$ and $7^{\circ} 16'$ east longitude, is bounded on the north by the North Sea, east by Hanover and the western part of Prussia, south by Belgium, west by the North Sea. Its greatest length, from north to south, is 195 English miles; its greatest breadth from the west, on the North Sea to the extremity of Overyssel, on the east, 110 English miles. It contains 12,637 square miles, including the grand duchy of Luxembourg (which, although possessed of a separate administration, is connected with the kingdom in the person of the sovereign). The entire population, in 1872, was 3,835,111.

The following table gives the population (1872) and area of the provinces, including the reclaimed Haarlem Lake:

	AREA IN SQUARE MILES.	POPULATION.
North Brabant,	1,985	435,262
Gelderland,	1,972	436,029
South Holland,	1,176	700,499
North Holland,	966	591,338
Zeeland,	642	181,532
Utrecht,	531	175,037
Friesland,	1,267	300,257
Overyssel,	1,308	256,681
Groningen,	907	228,883
Drenthe,	1,029	106,713
Limburg,	854	225,352
	12,637	3,637,583
Grand Duchy of Luxembourg,	990	197,528
Total,	13,627	3,835,111

The land is generally low, much of it being under the level of the sea, rivers, and canals, especially in North and South Holland, Zeeland, the southern part of Gelderland, and Friesland. Along the west coast the low lands are protected from the sea by a line of sand-hills, or dunes, and where that natural defence is wanting strong dykes have been constructed to keep back the waters, and are maintained at great expense. The greatest of these dykes are those of the Helder and of West Kapell, on the east coast of Walcheren. Engineers, called the officers of the Waterstaat, take special charge of the dykes and national hydraulic works. A hilly district stretches from Prussia through Drenthe, Overyssel, the Veluwe, or Arnhem district of Gelderland, the eastern part of Utrecht, into the Betuwe or country between the Maas and the Waal. This tract has many pretty spots, is of a light sandy soil, well watered, and when not cultivated, is covered with heath or oak-coppice. The greater portion of the north is very fertile, the low lands and drained lakes, called Polders, being adapted for pasturing cattle, and the light soils for cereals and fruits; but in some districts there are sandy heath-clad plains, extensive peat-lands, and undrained morasses, which industry is rapidly bringing under cultivation.

The islands may be divided into two groups, of which the southern, formed by the mouths of the Schelde and Maas, contains Walcheren, South and North Beveland, Schouwen, Duveland, Tholen, St. Philipsland, Goeree, Voorne, Putten, Beyerland, Ysselmonde, Rozenburg, and the island of Dordrecht. The northern group

contains the islands at the entrance of the Zuyder Zee and along the coast of Groningen and Friesland, as Wieringen, Texel, Vlieland, Terschelling, Ameland, Schiermonnikoog, and Rottum. In the Zuyder Zee are Marken, Urk, and Schokland. The chief rivers are the Rhine, Maas, and Scheldt. Important branches of these are the Waal, Lek, Yssel, Roer, etc.

Water ways are more numerous than in any other European country, the immense tracts of meadow-land and the fertile polders being girdled by large canals, and cut in all directions by smaller ones for drainage and communication. Those of most importance to the national trade are, the North Holland canal, constructed 1819-1825, to connect the port of Amsterdam with the North Sea; the Voorne canal, from the north side of Voorne to Hellevoetsluis, which shortens the outlet from Rotterdam; the South Willemvaart, through North Brabant, Dutch and Belgian Limburg, from Hertogenbosch to Maastricht, being $71\frac{1}{2}$ English miles in length, and having 24 locks. Besides these, there are numerous important canals, connecting rivers, and cutting the kingdom into a network of water-courses. To improve the entrances to the Maas, the Hock, of Holland, has lately been cut. The new canal through the Y will be nowhere less than 80 yards broad, with sluices nearly 400 feet in length, and a depth of nearly 23 feet. It will reduce the distance from Amsterdam to the sea to about 15 miles, and gives a safe way for large ships.

The climate of the Netherlands is variable, chilly colds often closely succeeding high temperatures, inducing various forms of fever and ague, and requiring peculiar care as to clothing, etc. In summer, the thermometer sometimes rises above 80° , and even to 90° F. in the shade, and a winter of great severity usually occurs every fifth year, when carriages and heavily laden wagons cross the rivers and the Y on the ice, and thousands enjoy the national pastime of skating.

The farms are generally small and well cultivated. The leading agricultural products of Zeeland are wheat and madder; in South Holland, madder, hemp, butter, and cheese; in North Holland, butter and cheese are extensively made, and cattle, sheep, and pigs reared and exported. The horses of Friesland, Zeeland, and Gelderland are of first-rate quality. The exportation of butter from Holland and Friesland, and of Edam, Leyden, Gonda, and Frisian cheese, is quite large. Fruit is abundant, and in several provinces, as Gelderland, Utrecht, and Drenthe, much attention is paid to bees. In Haarlem and neighborhood, tulips and hyacinths are much cultivated, realizing a large annual amount. Wild ducks, snipes, plovers, and hares are plentiful; and there are also conies, partridges, pheasants, and deer—game forming an article of export.

The Netherlands are of recent formation, and consist of an alluvial deposit, chiefly of a deep, rich clayey soil, superimposed on banks of sand, marine shells, and beds of peat and clay. It appears that at some distant period there has been a depression of the land below its former level, enabling the sea to burst through its sand-banks, submerge the land, and form new deposits. The higher districts are composed of sand-drift mingled with fertile earths, and resting on a bed of clay. Coal is worked in Limburg; and a soft sandstone, which becomes fit for building purposes after having been some time exposed to the atmosphere, is quarried in the southern part of that province, which has also pipe and other clays. Valuable clays for pottery, tile, and brick making, abound in the various provinces.

The chief manufactures are linen, woolen, cotton, and silk fabrics; paper, leather, glass, etc. Leyden and Tilburg are famed for woolen blankets, wool-dyed pilot, fine cloths, and friezes; Hertogenbosch for linens and rich damasks; calicoes, shirtings, drills, tablecloths, striped dimities are made at Almelo, Amersfort, and in the leading towns of Overyssel. Good imitation Smyrna and Scotch carpets, and carpets of hair and wool, are manufactured at Deventer, Delft, Arnhem, Hilversum, Utrecht, and Breda; Turkey-red yarns, dyed silks, and silk stuffs at Roermond, Utrecht, Haarlem, etc.; leather, glass, firearms, at Maastricht and Delft; iron-smelting, rolling and hammering of lead and copper, cannon-founding are carried

on at the Hague, etc.; and powder-mills at Muiden; Oudenkerk, Middelburg, Hertogenbosch, Amsterdam, Nymegen, etc., have important breweries. Waalwyk, Heusden, and surrounding districts, manufacture boots and shoes, of which Heusden sends to North and South Holland 1,000,000 pairs annually. Gin is distilled at Schiedam, Delft, Rotterdam, and Weesp. Amsterdam has the largest diamond-cutting trade in the world, 10,000 persons depending on that branch of industry. Sugar refining is largely carried on at Amsterdam, Rotterdam, and Dordrecht, from all of which sugar is exported to Russia, the Levant, and countries of Europe. Paper is chiefly made in Holland and Gelderland. The leading letter-type founders are at Amsterdam and Haarlem. Manufactures of every kind are being rapidly increased in number, and adding to the material prosperity of the Netherlands. The chief motive power is the windmill, which forms a never-failing element in the scenery; but of late years steam is becoming more general.

Fishing, not only in the inland waters, the coasts and bays of the North Sea, but also on the coast of Scotland, is vigorously pursued. In 1872 the total value of the herrings taken in the North Sea was about \$450,000, 108 vessels having been employed; on the Netherland coasts, to the value of about \$250,000, and in the Zuyder Zee, additional, 18,052,000 herrings were taken. The anchovy take, almost exclusively in the Zuyder Zee, amounted to 9000 anker, valued at about \$90,000. There are productive oyster beds, besides extensive fishings of cod, ling, turbot, flounders, soles, shrimps, haddock, etc.; and from the rivers, salmon, eels, perch, etc.

The foreign commerce of the Netherlands, during the year 1873, was as follows:

	IMPORTS. IN GULDERS.	EXPORTS. IN GULDERS.*
Europe,	533,390,000	459,799,000
America,	39,838,000	8,125,000
Asia,	23,207,000	435,000
Africa,	2,747,000	890,000
Other countries,	298,000	1,000
	<hr/>	<hr/>
	599,480,000	469,250,000

COLONIAL POSSESSIONS.

Java,	82,485,000	45,083,000
West Indies,	119,000	302,000
	<hr/>	<hr/>
	682,084,000	514,635,000

The Guinea coast is not included in the above, the statistics for 1873 not being at command. During 1872, the imports 26,000, the exports 137,000 guilders. At the end of 1874 the merchant navy numbered 1827 vessels of 511,982 tons.

The constitution vests the whole legislative authority in a parliament composed of two chambers, called the States-General. The Upper House, or First Chamber, consists of 39 members, elected by the provincial states, from among the most highly assessed inhabitants of the various counties. The Second Chamber of the States-General, elected by ballot, at the rate of one deputy to every 45,000 souls, numbered 80 members in 1875. All citizens, natives of the Netherlands, not deprived of civil rights, and paying assessed taxes to the amount of not less than 20 guilders, are voters. Clergymen, judges of the High Court of Justice, and governors of provinces, are debarred from being elected. Every two years one-half the members of the Second Chamber, and every three years one-third of the members of the Upper House, retire by rotation. The Second Chamber has the initiative of new laws, and the functions of the Upper House are restricted to either approving or rejecting them, without the right of inserting amendments. The king has full veto power, but it is rarely, if ever, exercised. The executive authority is, under the

* The guilder equals 40 cents gold.

sovereign, exercised by a responsible council of ministers. The budget estimates for the year 1874, were as follows: Total revenue, 93,742,144 guilders; total expenditure, 93,742,144; estimated deficit, 6,244,740 guilders. The financial estimates are always framed with great moderation, generally showing a deficit, which, in the final account, becomes a surplus. There is a separate budget for the great colonial possessions in the East Indies. The Netherlands East India estimates, for 1874, are thus summarized :

	GULDERS.
Revenue from receipts in the Netherlands,	48,958,967
" " in India,	<u>74,639,232</u>
	<u>123,598,199</u>
Expenditure in the Netherlands,	17,956,922
" " India,	<u>95,096,698</u>
	<u>113,053,620</u>
Contribution in aid of the Home Government, for 1874, . .	<u>10,544,579</u>
	<u>123,598,199</u>

At the commencement of the year 1874, the national debt was represented by a capital of 927,320,076 guilders. The regular army stationed in the Netherlands comprised, on the 1st of July, 1875, 1935 officers and 59,491 men. The colonial army, on the 1st of January, 1875, comprised 27,475 men, 12,310 of whom were Europeans, and 15,165 natives. The navy, on the 1st of July, 1875, consisted of 88 steamers, carrying 474 guns, and 27 sailing vessels, with 195 guns. At the beginning of the year 1875, there were 1668 kilometres of railway opened for traffic. Of these, 853 belonged to private companies and 815 to the State. The number of post offices at the commencement of 1875 was 1241; the number of letters carried during the year, 44,396,330. The length of telegraph lines, January 1st, 1875, was 3431 kilometres; the length of wires, 12,365 kilometres; the number of offices, 328. During the year 1874 the number of telegrams carried was 2,084,121. Under the working of the primary instruction law, there were, in January, 1871, according to government returns, 2608 public schools, with 6538 schoolmasters and 477 schoolmistresses, and 1119 private schools with 2332 schoolmasters and 1565 schoolmistresses. At the same date the pupils in the public schools numbered 390,129, and the pupils in the private schools, 111,762. There were, also, in 1871, 81 schools of middle instruction, with 7047 pupils, and 55 Latin schools, with 1128 pupils. There are three universities, Leyden, Groningen, and Utrecht, with 1339 students in January, 1871, and a polytechnic institution, at Delft, with 171 pupils.

COLONIES.

The colonial possessions of the Netherlands embrace an area of 666,756 English square miles. The total population, according to the last returns, was 24,386,991.

The East Indian island of Java, possessing, with the adjoining Madura, an area of 51,336 English square miles, and a population, at the end of 1872, of 17,298,200, is by far the most important of the colonial possessions of the Netherlands. The whole of the other Netherlands possessions in the East Indies are administered as dependencies of Java.

Almost the entire trade of Java and Madura is with the Netherlands, and there is comparatively little commercial intercourse with other countries. The total imports, including specie, for 1873, were 108,304,000 guilders; total exports, including specie, 155,881,000 guilders. The principal articles of export from Java are sugar, coffee, rice, indigo, and tobacco. The imports of the other East Indian possessions, during 1873, were 42,486,000 guilders; the exports, 41,869,000 guilders.

The Dutch West India Islands, of which Curacao is the most important, have a total population of 36,160, and an area of about 400 square miles. Surinam, with an area of about 45,000 square miles has a population of 69,834.

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1 Lent, W., Schooten.—Iron and cinnabar. 100
2 Seirat, C. H. A., Utrecht.—Peat pressed by machinery. 101
3 Oudewater, H. F., Dordrecht.—Stones for pavement. 102

4 Van Verschuur & Van der Voort, Amsterdam.—Unpolished stones. 102
5 Borst & Roggenkamp, Delfzyt.—Portland cement stones, lithographic stones, oilstones, wheastones, grindstones, polishing material, and sand quartz; garnets, raw topazes, diamonds, tritoli, and corundum. 103

SWEDEN.—STATISTICAL PREFACE.

SWEDEN and Norway (*Sverige* and *Norge*), two independent kingdoms, but under a common king, form the Scandinavian peninsula, whose shores are washed by the waters of the Gulf of Bothnia, the Baltic, the Sound, the Kattegat, the Skager-Rack, the North Sea, the Atlantic and Arctic Oceans, and is thus completely separated from the mainland, with the exception of its northeastern part. The length of its coast, which is indented with numerous bays and fiords, and protected from the brunt of the sea by innumerable islands and rocks, may be estimated at about 3200 English miles, each kingdom possessing about one-half. The Scandinavian peninsula, of which Sweden forms the eastern and southern part (58 per cent.), while Norway makes up the rest (42 per cent.), embraces an area of 13,830 geographical square miles (294,000 English square miles). The united kingdoms have a population of rather more than six millions, of which 70 per cent. belong to Sweden, and 30 per cent. to Norway. The statistics of Norway are given elsewhere in this catalogue.

Although Sweden extends northward to latitude $69^{\circ} 3' 21.1''$, thus passing beyond the Arctic circle, it reaches southward to latitude $55^{\circ} 20' 18''$, coming within the latitude of its neighboring state, Denmark, and even further south than that part of Prussia which projects northward along the eastern shore of the Baltic. The total length of Sweden, from north to south, is about 950 English miles, and the width from 200 to 250 English miles. The observatory of Stockholm lies $18^{\circ} 3' 29.85''$ east of Greenwich.

The läns (governments or departments) are the largest administrative divisions of the country, and frequently have two names, one of which is derived from the seat of government, the other usually from the old division of the provinces. The geographic division of the kingdom into three parts stands in intimate relation with the old provincial division. The three geographical divisions are as follows: Svealand (the central), Götaland (the southern), and Norrland (the northern); and though the boundaries of the läns and the provinces do not quite correspond, the following may on the whole be stated as correct:

Svealand has six provinces: Uppland, Södermanland, Westmanland, Nericke, Värmland, and Dalecarlia (or Dalarne).

Götaland has nine provinces: Ostergötland, Westergötland, Dalsland, Småland, Gotland, Blekinge, Scania or Skåne, Halland, and Bohuslaw.

Norrland comprises Gestrickland, Helsingland, Medelpad, Angermanland, Jemtland, Herjedalen, and Westerbotton, together with Lapland.

Lapland, the most northern part of Sweden, bordering on Norway, has an area of about 40,000 English square miles, and, together with Norrland, forms more than one-half the whole area. This vast territory is, of all the Swedish provinces, the least adapted to agriculture, and is but sparsely populated.

In 1874, the population of Sweden was divided among the different läns, as follows:

NAMES.	POPULATION.	NAMES.	POPULATION.
The town of Stockholm,	150,446	Län of Elfsborg,	285,217
Län of Stockholm,	134,620	" Skaraborg,	250,257
" Uppsala,	103,282	" Värmland,	266,362
" Södermanland,	139,216	" Örebro,	177,084
" Ostergötland,	262,872	" Westmanland,	121,018
" Jönköping,	186,841	" Kopparberg,	184,330
" Kronoberg,	163,793	" Gefleborg,	160,487
" Kalmar,	238,399	" Westernorrland,	147,212
" Gotland,	54,499	" Jemtland,	74,758
" Blekinje,	130,921	" Westerbotton,	96,607
" Kristianstad,	228,498	" Norrbotten,	81,987
" Malmöhus,	330,115	Total,	4,342,559
" Halland,	130,802		
" Göteborg, and Bohus,	241,996		

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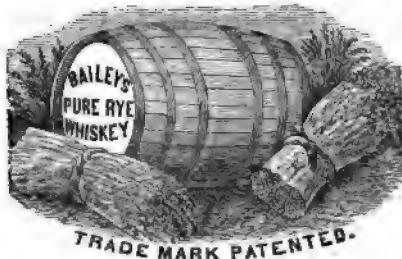
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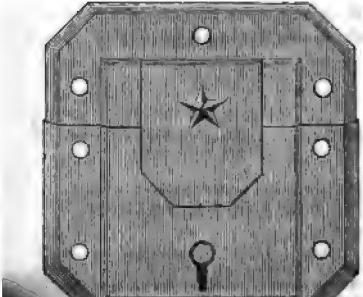
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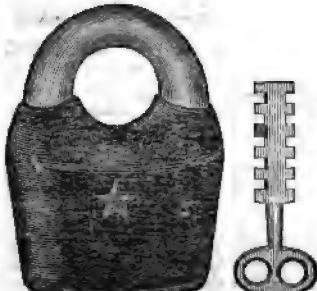
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The area is stated at 171,749 English square miles.

Sweden is generally less mountainous than Norway, and the highest mountains are found just on the border of that country. The boundary line itself is supposed to run along a mountain chain, which is called by geographers the Kölén, though in reality there is no mountain of that name. The highest mountain in Sweden, Sulitelma (6315 Swedish feet above the level of the sea), lies in Lapland, and is the only alpine elevation in Sweden where, as far as is known, glaciers are found, but there are other mountains in these districts, and still further south along the frontier of the kingdom, in Jemtland and Herjedalen, with an elevation of from 4000 to 5000 feet, whose peaks are dotted with patches of snow the whole year round.

About eight per cent. of the area of Sweden is considered to lie upwards of 2000 feet above the level of the sea. Those parts which sometimes extend beyond the tree-line are exclusively in Norrland and Dalarne, and border upon Norway. The coast-line along the Gulf of Bothnia, and the whole of the central and southern parts of Sweden, lie, with few exceptions, lower than 800 feet above the level of the sea. Of the whole area of the kingdom, a third part does not lie 300 feet above the level of the sea, and it is within these lower lying districts that the most highly cultivated parts of the country are found, as well as the largest plains, such as the Uppland, the Ostgöta, the Westgöta, and the Skane plains. With the exception of these, the plains are neither numerous nor large, for, though there are extensive tracts of land which attain a height of only a few hundred feet above the level of the sea, these are generally intersected by numerous hills and valleys.

Sweden, next to Finland, is the best irrigated country in Europe, as her lakes and rivers cover an area of 14,428 English square miles, or 8.4 per cent. of her whole territory, while she has a sea coast of 1500 English miles. The water of the Swedish lakes, as well as that of the rivers, is generally clear and drinkable. Lake Wetter is especially known for its clear, but at the same time turbulent, body of water, as well as for its great depth—420 feet. Of the numerous rivers (or elfs) which flow into the Gulf of Bothnia, the Angerman elf is the best known, not only for its volume, but for its natural beauty. The Dal elf, which is usually considered as the dividing line between Norrland and the southern part of Sweden, empties further to the south. On the west coast flows the Göta elf, the outlet of Lake Wener, famed for the Trollhättá waterfall.

Almost every river or stream forms a foaming current or roaring cataracts, and there are thousands of them. Even the Trollhättá finds a rival in the Njommelsaska (Hare's Leap), in Lapland. One of the peculiarities of these lakes is that they are sometimes interrupted by an almost perpendicular fall—the water then spreading out, forming a second part of the lake. The nation possesses in these numerous falls an almost inexhaustible water power, which has not, as yet, been utilized to that extent which it might be. This character of the Swedish rivers carries with it, however, the disadvantage of rendering them innavigable, many of the rivers (the Dal elf, for instance) being barred at their very mouths by a fall; and, as a rule, they are navigable only for a mile or two, except for rafts and small boats, unless, as in the case of the Göta elf, they are provided with canals.

The climate of Sweden is mild in comparison to its high latitude, a fact which is attributed to the influence of the Gulf Stream. There are dense forests; and barley and rye mature in the province of Norrland, while its most southern part lies in the same latitude as the ice fields of Greenland, and its northern in that of barren Iceland. The country, extending through so many degrees of latitude, has a great variety of climate. The mean yearly temperature of the northern parts along the coast is 34° F., while that of the southern is 44° to 46° F. The mean yearly temperature of Stockholm is 41° F. The wells which serve as a measure of the earth's temperature, give about the same figures, the average temperature of a deep well in central Sweden being 43° F., while it is not unusual in Lapland to find a deep well covered with ice in midsummer, or a bog, 5 to 6 feet deep, frozen at its bottom; nevertheless,

the cereals and potatoes mature in these districts, for although the summer is short, it is very warm and clear. There can scarcely be said to be any night here during the summer, only a twilight, so that vegetation, even in this high latitude, receives the light and heat necessary for its ripening. The temperature of the southern parts is also subject to very great changes.

The farmers' worst enemy in Sweden is the frost, which in a single clear night, perhaps, after a warm summer day, will destroy his brightest prospects; but it is hoped that the increase of tillage, the draining of the bogs, and like causes, will at least mitigate its severity, if not altogether prevent it. Such severe frosts are very rare in the central and southern parts of Sweden.

(The greater portion of the foregoing was furnished by the Swedish commission.)

Mining is one of the most important departments of Swedish industry, and the working of the iron mines in particular is making constant progress by the introduction of new machinery. There were raised, in the year 1873, 19,458,339 hundredweight of iron ore from mines, besides 126,147 hundredweight from lake and bog. The pig iron produced amounted to 7,987,646 hundredweight, the cast goods to 501,350 hundredweight, the bar iron to 4,125,915 hundredweight, and the steel to 1,290,907 hundredweight. There were also raised, in the same year, 1660 pounds of silver, 26,152 hundredweight of copper, and 645,631 hundredweight of zinc ore. There are large veins of coal in various parts of Sweden, but no systematic working of them has as yet taken place.

The principal articles of cultivation are, in addition to the various cereals, potatoes, hemp, flax, tobacco, and hops, which are generally grown in sufficient quantities for home consumption. The forests are of great extent, covering nearly one-fourth of the whole surface, and, in some spots, rising to an elevation of 3000 feet above the level of the sea. The birch, fir, pine, and beech are of great importance, not only for the timber, tar, and pitch which they yield, but also for their supplying charcoal and firewood. The common fruit trees, as cherries, apples, and pears, grow as far north as 60°, but the fruit seldom comes to great perfection except in the southern provinces; cranberries and other berries abound in all parts of the country.

In 1870, there were in Sweden, 428,446 horses, 1,965,800 horned cattle, 1,780,000 sheep and goats, and 354,303 swine.

In 1873, there were 2549 factories, with a production valued at 146,869,000 crowns.* Mines and mining establishments are not included in these figures. Ship building forms an extensive branch of industry.

According to the "Statesman's Year Book for 1876," the commercial navy of Sweden, at the end of 1873, numbered 1865 registered vessels for foreign trade, of a total burthen of 366,370 tons. The total imports, for the same year, were 271,440,000 riksdalers,† and the exports, 221,904,000.

Sweden is a constitutional monarchy, based on the fundamental law of 1809, by which it was decreed that the succession should be in the male line; that the sovereign should profess the Lutheran faith, and have sworn fidelity to the laws. The diet, which meets every year, and remains sitting for three or four months, is composed of two chambers, which are both elected by the people. The members of the first chamber serve for nine years, and those of the second for three. The diet exercises a strict control over the expenditure of the revenue, fixes the budget, and has power to take cognizance of the acts of the ministers and crown officers. The king's person is inviolable, and he can exercise a veto on the decrees of the diet. He is assisted by a Council of State, composed of ten members, who are responsible to the diet.

The budget estimates for 1875 place the receipts at 64,775,900, and the expenditures at 71,885,798 riksdalers. At the end of October, 1875, the public liabilities of the kingdom were 130,477,920 riksdalers.

* The Swedish crown equals 26.8 cents.

† One riksdaler equals one crown.

The total strength of the armed forces of Sweden, at the end of September, 1875, was 132,775. The navy consists of 131 vessels, of 3183 horse-power, carrying 394 guns, and with crews aggregating 4693.

At the end of September, 1875, the total length of railways opened for traffic was 2237 English miles, of which 938 miles belonged to the State. All the telegraphs, with the exception of those of private railway companies, belong to the State. The total length of telegraph lines, at the end of 1874, was 4981 English miles; the total length of wires, 10,980 English miles. The total number of dispatches sent, in the year 1874, was 986,397.

The Swedish post office carried 16,711,100 letters in the year 1873. The number of post offices, at the end of the year, was 641.

Education is well advanced in Sweden. Public instruction is gratuitous and compulsory, and children not attending schools under the supervision of the government must furnish proofs of having been privately educated. In the year 1871 nearly 97 per cent. of all the children between eight and fifteen years visited the public schools.

Commission from SWEDEN to the International Exhibition :

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SWEDEN.

(*North of Nave, Columns 6 to 11.*)

Minerals, Ores, Stone, Metallurgical Products.

Minerals, Ores, Stone, Mining Products.

- 1 Adelsvård, Baron, Th., Atvidaberg.—Copper ore. 100
 - 2 Bofors Stock Co., Gullspang, Bofors.—Iron ores. 100
 - 3 Berg, Axel, Warby, Stockholm.—Iron ores. 100
 - 4 Berg, Gottfried, Warby, Stockholm.—Zinc, galena, and nickel ores, pyrites. 100
 - 5 Fagersta Stock Co., Westanfors.—Iron ores. 100
- COLLECTIVE EXHIBIT OF IRON MANUFACTURERS, STOCKHOLM.**
- 6 Avesta Garpenbergs Stock Co., Avesta.—Iron ores. 100
 - 7 Björneborgs Stock Co., Björneberg.—Iron ores. 100
 - 8 Degerfors Stock Co., Degerfors in Värmland.—Iron ores. 100
 - 9 Ekman, Carl, Finspong.—Iron ores. 100
 - 10 Gysinge Iron Works, Gysinge.—Iron ores. 100
 - 11 Hermansson, Count C. F. von, Ferna, Bernshammar.—Iron ores. 100
 - 12 Hofors & Hammarby, Hammarby, Storvik, Gefle.—Iron ores. 100
 - 13 Larabo Norns Stock Co., Kafalia.—Iron ores. 100
 - 14 Laxa Stock Co., Laxa.
a Iron ores. 100
b Pig iron, blooms, and iron bar. 111
 - 15 Lesjöfors Stock Co., Filipstad.—Iron ores. 100
 - 16 Lindberg, Lars, Kohlsva.—Iron ores. 100
 - 17 Löfvenskiöld, Salomon, Nissafors, Jönköping.—Iron ores. 100
 - 18 Ramnäs Stock Co., Ramnäs.
a Iron ores. 100
b Pig, bar iron, and slag. 111
 - 19 Rettig, C. A., Kilafors, Söderhamn.—Iron ores. 100
 - 20 Schiesshyttan Molnebo Manufacturing Co., Morgongåva.
a Iron ores. 100
b Spiegelisen. 111
 - 21 Stockenström, Axel von, Akers Manufacturing Co., Mariefred.—Iron ores. 100
 - 22 Kopyrbergs Factory, Stockholm.—Iron ores. 100
 - 23 Sundström, J. O., Charlottenberg.—Iron ores. 100

- 24 New Gellivara Company (limited), Lulea.—Iron ores. 100
- 25 Osterby & Strömbäcks, Osterby.—Iron ores. 100
- 26 Uddeholms Stock Co., Rada.—Iron ores. 100
- 27 Wedberg, C. H., Hammarby, Jerla.—Iron ores. 100
- 28 Nordenskiöld, A. E., Stockholm.—Meteorite from Greenland. 100
- 29 Sandvikens Stock Co., Sandviken.—Iron ores. 100
- 30 Schough, Robert, Lulea.—Iron ores, copper ores. 100
- 31 Geological Society of Sweden, Stockholm.—Geological collections. 100
- 32 Höganäs Coal Works, Höganäs.—Mineral coal. 101
- 33 Samuelson, S. H., Föskefors, Rada.—Peat. 101
- 34 Westerlund, A. F., Nybro, Kalmar.—Peat. 101
- 35 Berg, Gottfried, Wärby, Stockholm.—Porphyry, serpentine, and marble. 102
- 36 Klintberg, J. W., Wisby.—Marble, petrifications. 102
- 37 Kullgrens', C. A., Widow, Uddevalla.—Polished granite. 102
- 38 New Marble Works Stock Co., Norrköping.—Manufactured marble. 102
- 39 Skaanska Cement Stock Co., Malmö.—Portland cement, raw materials and products. 103
- 40 Rörstrands Stock Co., Stockholm.—Feldspar. 104
- 41 Höganäs Coal Works, Höganäs.—Fire clay, fire brick. 104
- 42 Berg, Gottfried, Warby, Stockholm.
a Graphite. 105
b Grindstones. 106
c Vivianite. 107
- 43 Berg, Chr. Lud., Eriksberg, Stockholm.—Mineral waters. 107
- 44 Mineral Water Stock Co., Stockholm.—Mineral waters. 107

Metallurgical Products.

- 45 Bofors Stock Co., Gullspang, Bofors.—Pig iron, blooms, bar iron, wire rods, and iron plate.
- 46 Fagersta Stock Co., Westanfors.—Pig iron, Bessemer steel ingots, bars, plates, etc.; steel samples, showing the strength of the steel. 111

Metallurgical Products.

- 47 Göteborgs Mechanical Works Stock Co., Göteborg.**—Crown of a flue. ^{III}
- COLLECTIVE EXHIBIT OF IRON MANUFACTURERS, STOCKHOLM.**
- 48 Ankarsrums Works, Ankarsrum.**—Pig iron, blooms, iron bars, wire rods, and railway crossings. ^{III}
- 49 Avesta Garpenbergs Stock Co., Avesta.**—Pig iron, blooms, and bar iron. ^{III}
- 50 Björneborgs Factories, Björneborg.**—Pig iron, Bessemer steel ingots, and manufactured Bessemer steel. ^{III}
- 51 Degerfors Stock Co., Degerfors, Värmland.**—Pig iron, blooms, wire rods, and plate. ^{III}
- 52 Ekman, Carl, Finspong.**—Pig iron for guns, and malleable blooms, and bar iron. ^{III}
- 53 Gysinge Iron Works, Gysinge.**—Iron in the pig and bars, with specimens of slag. ^{III}
- 54 Von Hermansson, C. F., Count, Ferna, Bernshammar.**—Pig iron, spiegel-eisen, and bar iron. ^{III}
- 55 Hofors & Hammarby, Hammarby, Storvik, Gefle.**—Pig iron, blooms, and bars, with specimens of slag. ^{III}
- 56 Larabo, Norns, Stock Co., Kafalla.**—Pig iron, blooms, bar iron, and angle iron. ^{III}
- 57 Lesjöfors Stock Co., Filipstad.**—Pig iron, ingots of Bessemer and Martin steel, bars, wires, and wire rope of the same material. ^{III}
- 58 Lindberg Lars, Kohisva.**—Pig iron, bar iron, and wire rods. ^{III}
- 59 Löfvenskiöld, Salomon, Nissafors, Jönköping.**—Iron in the pig and bars. ^{III}
- 60 Rettig, C. A., Kilafors, Söderhamn.**—Pig and bar iron. ^{III}
- 61 Von Stockenström, Axel, Marie-fred.**—Pig iron for malleable iron. ^{III}
- 62 Bergslag Iron Works, Stockholm.**—Pig iron, Bessemer ingots, blooms, bar iron, and samples of iron showing the quality. ^{III}
- 63 Sundström, J. O., Charlottenberg.**—Pig iron, bar iron, and spikes. ^{III}
- 64 New Gellivara Company (limited), Lulea.**—Pig iron, bar iron, and nails. ^{III}
- 65 Asterby & Strömbacca, Osterby.**—Pig iron, Bessemer steel ingots and bars, blister steel, crucible cast steel, and bar iron. ^{III}
- 66 Surahammars Stock Co., Surahammar.**—Iron plate, puddled iron, and steel bars, railway wagon wheels and axles. ^{III}
- 67 Uddeholms Stock Co., Rada.**—Pig iron, ingots of Bessemer and Martin steel, and iron in bars, springs. ^{III}
- 68 Larsson, P. M., Löa, Rälisa.**—Samples of pig iron. ^{III}
- 69 Motala Mekaniska Stock Co., Motala.**—Iron and steel in bars, plates, and sheets, with products of working. ^{III}
- 70 Sandvikens Iron Works, Sandviken.**—Pig iron, Bessemer steel ingots, forgings for engines, steamers, etc. ^{III}
- 72 Adelswärd, Th., Baron, Atvidaberg.**—Copper in ingots, with specimens illustrating its various stages of production. ^{II²}
- 73 Skultuna Stock Co., Westera.**
 a Copper, with products of working. ^{II²}
 b Brass in different stages of production. ^{II⁴}
 (For rails, railway and wagon wheels, tires, axles, etc., see Class 573, Machinery Hall.)

• NORWAY.—STATISTICAL PREFACE.

NORWAY, the western portion of the Scandinavian peninsula, is situated between $57^{\circ} 58'$ and $71^{\circ} 10'$ north latitude, and between 5° and 28° east longitude. It is bounded to the east by Sweden and Russia, and on every other side is surrounded by water, having the Skagerrak to the south, the German Ocean to the west, and the Arctic Sea to the north. Its length is about 1100 miles, and its greatest width about 250 miles; but between the latitudes of 67° and 68° it measures little more than 25 miles in breadth. The area is given as 121,779 square miles, and the population as 1,800,000. Only 1.6 per cent. of the whole area can be cultivated; natural pastures occupy about 1.5 per cent.; forests, about 20.2 per cent.; mountains, glaciers, lakes, rivers, and land, etc., about 76.7 per cent. The whole of the Scandinavian peninsula consists of a connected mountain mass, which, in the southern and western parts of Norway, constitutes one continuous tract of rocky highlands, with steep declivities dipping into the sea, and only here and there broken by narrow tracts of arable land. South of Trondhjem (63° north latitude) the rocky ridge expands nearly the entire breadth of Norway. The northern portions of the range, known as the Kjötlen

Fjelle, occupy a space of about 25 miles in width, and form, as far north as 69° , the boundary line between Sweden and Norway. South of 63° north latitude the range of the Scandinavian mountains is known as the Norske, or Dovre Fjelle, although the latter name belongs properly only to the part immediately in contact with the Kiöllen. This range, about 360 miles in length, attains its greatest elevation at the Sogne Fjord, where it is known as the Hurungerne. Here the highest summits are 8000 and 8400 feet above the sea, while the contiguous snowfields of Justedal, the largest in Europe, and covering an area of 600 square miles, have probably an elevation of nearly 7000 feet. From these and other vast snowfields, averaging more than 10 miles in width, vast glaciers descend to within 2000 feet above the sea, where they often terminate in deep lakes, some of which are very extensive. The upper valleys of this range, although generally too high for cultivation, contain the best timber that is exported from Norway, and afford good pasturage in the height of the summer, when the flocks and herds are driven thither from the lowlands near the entrance of the fjords. The general elevation of the Norska Fjelle does not rise above the line of perpetual snow, whose average height in these latitudes is 5000 feet, but it ranges above that of the growth of trees, which may be stated to lie 1000 feet lower. The most northern part of the Norska Fjelle, which is known as the Dovrefield, and includes Sneehätten, nearly 7500 feet above the sea, presents a broken surface, rent with ravines and narrow valleys, which admit of cultivation, but are difficult of access from the configuration of the land around them.

The Scandinavian range consists principally of primitive and transition rock, and exhibits almost everywhere the effect of glacial action, the glaciers and moraines presenting the same appearances as in the Swiss alpine district. The numerous islands which skirt the coast of Norway, and must be regarded as portions of the range, present the same characters as the continental mass. Some of these, as the islands of Alsten and Dunnoe, rise perpendicularly from the sea with peaks penetrating beyond the snowline, which lies here at an elevation of 4000 feet. Norway abounds in lakes and streams; according to some topographers, there are upwards of 30,000 of the former, of which the majority are small, while none have an area exceeding 400 square miles. The chief rivers of Norway are the Glommen, Lougen, Louven, Drammen, Otter, and Wormen. The first of these has a course of 400 miles, but the majority of the Norwegian streams, all of which rise at great elevations, have a comparatively short course, and are unfit for navigation, although they are extensively used to float down timber to the fjords, whence the wood is exported in native ships to foreign ports. These fjords, or inlets of the sea, which form so characteristic a feature of Norwegian scenery, and give with their various sinuosities a coast-line of upwards of 8000 miles, form the outlet to numerous rapid streams and waterfalls, which leap or trickle down the edges of the treeless fields or mountain flats above.

The peculiar physical character of Norway necessarily gives rise to great varieties of climate in different parts of the country. The influence of the sea and of the Gulf Stream, and the penetration into the interior of deep inlets, greatly modify the severity of the climate on the western shores, and render it far superior to that of the other Scandinavian countries in the same latitude. In Norway proper, the winters, as a rule, are long and cold, and the summers, which rapidly follow the melting of the snows in April and May, are warm and pleasant. On the islands, however, the heats of summer are often insufficient to ripen corn.

Norway had, in 1875, 150,000 horses, 950,000 oxen and cows, 1,710,000 sheep and goats, 110,000 pigs, and 102,000 reindeer. The value of the annual product is about \$25,000,000.

The principal cereals cultivated in Norway are oats, barley, corn, rye, and wheat; the yearly produce is about 11,160,000 bushels, besides 14,100,000 bushels of potatoes. The value of the harvest amounts to about \$16,000,000 per annum.

The products of agriculture and cattle-breeding being insufficient to supply the wants of the country, considerable quantities are imported.

Forestry is of great importance. As stated above, the forests of Norway cover more than one-fifth of its entire area. They supply considerable quantities of timber, both for home consumption and exportation. The average annual exports of timber amount to about \$16,000,000.

The fisheries of Norway employ about 27,000 men, and yield about \$16,000,000 per annum. They are of great importance, and not only yield one of the most important articles of home consumption, but at the same time constitute one of the most profitable sources of foreign export. Fish are caught in almost every stream and lake of the interior, as well as in the fjords of the coast, and in the bays and channels which encircle the numerous islands skirting the long sea-line of Norway. These fish are principally cod and herring. Cod, prepared as stock-fish or dried salt fish, is exported to Spain and Italy; herring to the Baltic ports.

The merchant marine of Norway had, in 1875, a tonnage of 1,220,000, and was manned by 53,000 seamen.

The following statistics apply to the exports and imports of Norway in 1873:

Value of goods exported,	\$33,000,000
Gross freight of goods carried in Norwegian vessels,	\$8,400,000
Receipts from various sources,	800,000
	<hr/>
Value of goods imported,	\$45,800,000
Expenses of Norwegian vessels in foreign countries,	11,400,000
Other expenses,	2,400,000
	<hr/>
Balance,	59,600,000
	<hr/>
	\$2,600,000

* The principal articles of export were, in 1873: Products of the fisheries, \$11,600,000; of forestry, \$15,500,000; of agriculture and cattle-breeding, \$1,300,000; metals and minerals, \$1,800,000; textile fabrics, \$660,000.

The imports were principally: Articles of food, \$13,500,000; coffee, \$3,500,000; liquors, \$1,000,000; textile fabrics and dry goods, \$8,300,000; hardware, \$3,300,000; hides, \$1,200,000; coal, \$1,700,000; vessels, \$4,400,000.

Manufactures have made some progress during the last few years, but are, as yet, inconsiderable. About 32,000 persons are employed, mainly in sawmills, planing mills, brick factories, shipbuilding, and metallurgical and textile industries.

The mineral products comprise silver, copper, cobalt, iron, chrome, ironstone, etc., and yield an annual income of nearly \$1,000,000.

Education is compulsory, parents being bound to let their children, between the ages of seven and fourteen, receive public instruction; 241,000 children attend the common schools, and 16,500 receive a higher instruction. The expenses of the higher schools were, in 1873, \$827,000.

The public revenue, in 1873, was \$6,870,000, and the expenditures \$7,277,000, of which amount \$865,000 was for the construction of railways. The public debt amounts to \$9,200,000.

Norway has 12,432 miles of highways and district roads, 304 miles of railways, and 147 miles of canals. There are 719 post offices, which distribute 7,500,000 letters per annum.

(The foregoing statistics are furnished by the Norwegian Commission.)

According to "Martin's Year Book," there were, at the end of 1873, telegraph lines of the length of 3745 miles, and wires of the length of 5845 miles.

The government of Norway is a constitutional monarchy. The executive is represented by the king, who exercises his authority through a Council of State, composed of one minister of state and nine councillors. The legislative power of the realm is the Storthing, or Great Court, the representative of the sovereign people.

On the 1st of January, 1874, the troops of the land numbered 13,000 men. The reserve forces at the same time numbered 19,000, and the landwaern 11,000 men. The naval force comprised, at the same date, twenty vessels, all steamers, with an armament of 149 guns.

Commission from NORWAY to the International Exhibition:

HERMAN BAARS.

WM. C. CHRISTOPHERSEN.

GERHARD GADE, U. S. Consul.

NORWAY.

(*North of Nave, Columns 4 to 7.*)

Mining and Metallurgy.

Minerals, Ores, Building Stones, Mining Products.

1 Geological Survey of Southern Norway, Director Th. Kierulf, Christiania.		9 Moestue & Co., Thv., Christiania.—Slates for tables, roofs, and floors, from Slidre quarries.	102
a Stones, eruptive rocks, leading strata, constituents of coarse granite dykes.	100		
b Manuscript maps, natural sections, generalized representations, printed maps.	335		
2 Fasmor & Son, I. H., Bergen.—Feldspar.	100	10 Pettersen, Karl, Tromso.—Granite, labbro and other massives, raw and polished, geological map with description.	102
3 Hinderager Mining Co., Bergen.—Copper ore, pyrites.	100	11 Frolich & Son, F. H., Christiania.—Collection of Norwegian apatite ores (phosphate of lime).	103
4 Moyem, Andr., Bergen.—Titanium iron ore.	100	12 Birch, F., Selboe.—Millstones.	106
5 Kongsgberg Silver Mines, Kongsberg.		13 Geological Survey of Southern Norway, Assistant Geologists W. Brogger and H. Reusch, Christiania.—Contents of giant-kettles, spiral marked interior grinding-stones.	106
a Ores, crystals.	100	14 Christiania Millstones Manufacturing Co., Christiania.—Millstones.	106
b Silver in bars.	100	15 Lönseth, Fred., Christiania.—Millstones from Selbo, flint millstones.	106
6 Bamble Nickel Mines, Johan Dahl, Kragero.—Samples of nickel ores, with specimens illustrative of the melting process.	100	16 Royal Norwegian Commission, Christiania.—Iron and steel from Messrs. J. Aall & Son, Nas & Eglands Foundries.	111
7 Glorud Nickel Co., F. H. Frolich & Son, Christiania.—Nickel ores.	100	17 Cathrineholms Iron Works and Foundry, Fredrikshald.	
8 Luttensee, Georg, Christiania.—Quarry stone for street pavement and curbstones.	102	a Stoves and other wrought iron.	222
		b Anchors, chains.	284

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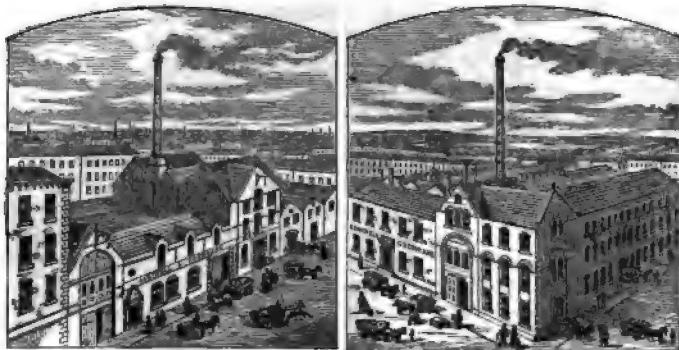
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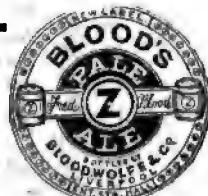
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ITALY.—STATISTICAL PREFACE.

THE geographical territory comprised under the name of Italy consists of a considerable stretch of peninsular mainland, besides several islands, situated in Southern Europe, between latitude $36^{\circ} 35'$ and 47° north, and between longitude $6^{\circ} 35'$ and $18^{\circ} 35'$ east. From the southern extremity of Sicily to the Alps its maximum length is about 600 miles, its utmost breadth being 300 miles. Its boundaries on the north are Austria and Switzerland, on the south the Mediterranean, on the west France and the Mediterranean, and on the east the Ionian and Adriatic seas, while its natural limits are strongly defined by the Alps and the sea.

The first general census of the kingdom of Italy was taken by the government on the 31st of December, 1871, on which date the population numbered 26,796,073 souls, living on an area of 296,013 square chilos, or 112,677 English square miles. The density of population was 237 per English square mile.

The kingdom of Italy is administratively divided in 69 provinces, as follows:

	POPULATION.
PIEDMONT AND LIGURIA.	
1. Alessandria,	683,361
2. Cuneo,	617,232
3. Genoa,	716,284
4. Novara,	624,969
5. Porto Maurizio,	127,042
6. Turin,	972,988
	3,741,876
ISLAND OF SARDINIA.	
7. Cagliari,	392,981
8. Sassari,	243,274
	636,255
LOMBARDY.	
9. Bergamo,	368,152
10. Brescia,	456,023
11. Como,	477,642
12. Cremona,	300,595
13. Milan,	1,009,794
14. Pavia,	448,357
15. Sondrio,	111,240
	3,171,803
EMILIA.	
16. Bologna,	439,232
17. Ferrara,	216,545
18. Forli,	234,090
19. Massac Carrare,	161,944
20. Modena,	273,231
21. Parma,	264,509
22. Piacenza,	225,775
23. Ravenna,	220,801
24. Reggio,	240,635
	2,276,762

	POPULATION.
THE MARCHES.	
25. Ancona,	262,369
26. Ascoli Piceno,	203,008
27. Macerata,	236,994
28. Pesaro e Urbino,	<u>213,073</u>
	915,443
UMBRIA.	
29. Perugia,	549,833
TUSCANY.	
31. Arezzo,	234,645
31. Florence,	766,611
32. Grosseto,	107,457
33. Leghorn,	118,851
34. Lucca,	280,399
35. Pisa,	265,959
36. Sienna,	<u>206,446</u>
	1,980,368
NEAPOLITAN PROVINCES.	
37. Aquila,	332,782
38. Avellino,	375,237
39. Bari,	604,540
40. Benevento,	232,012
41. Campobasso,	364,843
42. Caserta,	695,754
43. Catanzaro,	412,226
44. Chisti,	340,299
45. Cosenza,	440,272
46. Foggia,	322,754
47. Lecce,	493,574
48. Naples,	908,029
49. Potenza,	509,202
50. Reggio,	353,606
51. Salerno,	541,739
52. Teramo,	<u>245,684</u>
	7,171,553
SICILY.	
53. Caltanissetta,	230,066
54. Catania,	495,240
55. Giergenti,	289,018
56. Messina,	420,649
57. Palermo,	617,660
58. Siracusa,	294,915
59. Trapani,	<u>236,388</u>
	2,583,936
VENETIA.	
60. Belluno,	175,370
61. Mantua,	288,942
62. Padua,	364,355
63. Rovigo,	200,835
64. Treviso,	352,538
65. Udine,	481,787
66. Venezia,	337,539
67. Verona,	367,426
68. Vicenza,	<u>363,161</u>
	2,931,953
69. ROME.	836,292

According to the old political division, the population is divided as follows:

Piedmont and Liguria,	3,741,876
Island of Sardinia,	636,255
Lombardy,	3,171,803
Emilia,	2,276,762
The Marches,	915,443
Umbria,	549,833
Tuscany,	1,980,368
Neapolitan Provinces,	7,171,553
Sicily,	2,583,936
Venice,	2,931,953
Rome (States of the Church),	836,291
	<hr/>
	26,796,073

The physical aspect presented by the surface of Italy is diversified in the extreme. Northern Italy is, for the most part, composed of one great plain—the basin of the Po, comprising all Lombardy and a considerable portion of Piedmont and Venice, bounded on the northwest and partly on the south by different alpine ranges. Throughout Central Italy, the great Apennine chain gives a picturesque irregularity to the physical configuration of the country, which in the southern extremity of Italy assumes still wilder forms. In the highland districts of Naples in which the Apennine ridge reaches its maximum elevation (10,000 feet), the scenery exhibits a savage grandeur. Along the extensive coast plains, as well as in the sub-Apennine valleys, the rural charms of this portion of Italy are extreme, while the brilliant flora and vegetation impart to it a novel character of beauty. The chief mountain system of Italy is the frontier ridge of the Alps, and their noble continuation, the Apennines.

Italy likewise comprises a considerable stretch of volcanic zone, which traverses the peninsula from the centre to the south in a line parallel with that of the Apennines, and of which the most remarkable active summits are Vesuvius, adjoining Naples, Ætna in Sicily, and Stromboli in the Lipari Isles.

The great plains of Italy are those of Lombardy, which stretch from the Mincio to the Ticino and the Po; of Piedmont; the Venetian plains; the plain of the Roman legations; the plain of the Campo Felice, on which stands Vesuvius; the Apulian plain; the long, narrow Neapolitan plain of the Basilicata, 100 miles in length, and 24 miles in breadth, stretching along the Gulf of Tarento.

The great majority of the rivers of Italy are only navigable for small coasting boats or barges. By far the most important is the Po, which rises on the borders of France, and flows into the Adriatic. It has numerous tributaries. Among the others may be mentioned the Adige, Brenta, Piave, Tagliamento, Aterno, Sangro, Metauro, Ofanto, Bradano, also belonging to the Adriatic basin; the Arno, the Tiber, the Ombrone, the Garigliano, and the Volturno, which belong to the Mediterranean basin.

The canal system of Italy is most extensive in the north. Nine principal canals in Lombardy administer to the irrigation of the plains and to the purposes of commercial communication, contributing in no small degree to the prosperity of the district. The Naviglio Grande or Ticinello is the finest hydraulic construction in Italy; it communicates between the Ticino and Milan, and has a course of 28 miles, navigable for vessels of large size. It was begun in 1179. The Naviglio Martesana, 38 miles long, unites Concesa on the Adea with Milan; the Naviglio di Pavia is 18 miles in length; the bifurcated Naviglio d'Ostiglia unites the Po with the Adige. 253 canals intersect Piedmont, extending over a length of 1932 kilometres. Venice comprises 203 navigable, and 40 minor canals. Numerous canals have been constructed for the drainage of the Pontine Marshes. This system of water communication was early carried to a high degree of efficiency in Italy, and is of incalculable service in the agricultural districts.

The mountain lakes of Italy are famed for their picturesque beauty. They are mostly in the northern provinces of Lombardy and Venetia. The principal are Maggiore, Lugano, Como, Iseo, and Garda. The Roman lakes of Perugia, Bolseno, and Bracciano, that of Castiglione in Tuscany, and Celano in Naples, also deserve mention.

The mineral and thermal springs of Italy are innumerable, and possess a great variety of curative and sanitary properties.

In the northern provinces, the climate is temperate, salubrious, and frequently severe in winter; in the centre, it assumes a more genial and sunny character: while the heat of the southern extremity is almost of a tropical intensity. The singular clearness of the atmosphere sets off the landscape and monumental beauties of Italy with brilliant effect. The drawbacks of Italy's climate are the piercing tramontana or mountain winds; the deadly sirocco, which blights all nature at seasons along the western coast; and the malaria or noxious miasmata which issues from the Maremma of Tuscany, the Pontine Marshes, and the Venetian lagoons, generating pestilential fevers and aguish diseases in the summer season. The mean temperature of the leading divisions of the country throughout a whole year was as follows: Milan, 55° 4' of Fahrenheit's scale; Rome, 59°; Palermo, 62° 5'; and in Sardinia, 60° 5'. The highest temperature at Rome rises to 95°, and in Sicily from 97° to 104°.

The staple products of Italy are corn, wine, oil, raw silk, rice, olives, and fruits. Hemp, flax, and cotton are also largely grown. The sugar-cane is successfully cultivated in the two Sicilies. Agriculture, except in the north, is in a very backward condition. It is calculated that only two-thirds of the area of the kingdom capable of production are cultivated, and that the rest lies waste. The superficial extent of the productive soil of Italy is 23,017,096 ellaras,* divided thus:

	ELLARAS.
Arable land,	11,003,061
Meadow land,	1,173,436
Rice ground,	144,903
Olive plantations,	554,767
Chestnut plantations,	585,132
Woods and forests,	4,158,349
Pastures,	5,397,448
 Total,	 23,017,096

There are, besides, 3,997,059 ellaras of rock and marsh. Of the land capable of cultivation, more than half is devoted to the growth of cereals, mainly wheat. The average crop is insufficient for the supply of the country. The wines of Naples are esteemed the best, small quantities of the famous *Lachrima Christi* and the *Vind d'Asti* being exported, while the Sicilian wines of Marsala form a considerable item of export. The best oil and olives are furnished by Tuscany, Lucca, and Naples. Silk is chiefly manufactured in the northern provinces, the cultivation of the mulberry and the rearing of the silkworm forming, in Lombardy, a most important interest. The best manufactured silk comes from Piedmont, Tuscany, and the Roman provinces. The fruits of the two Sicilies are exquisite in flavor, and embrace several tropical species. Oranges, lemons, almonds, figs, dates, melons, and the pistachio nut, are common to all orchards, and are largely exported. A considerable cheese trade exists in the northern provinces.

The sea and fresh water fisheries of Italy are considerable, the Mediterranean furnishing immense quantities of tunny, anchovies, sardines, mullets, pelchards, and mackerel. The export of anchovies and of sardines is of immense extent. The

* One ellara equals 2.47 acres.

river fisheries yield salmon, trout, sturgeon, lampreys, tench, barbel, etc. The crustaceans and shell fish of the Italian seas are of great variety and delicate flavor, and are a favorite article of Italian consumption.

The total exports of the kingdom, during the year 1874, were 1,304,994,328 lire;* the imports, during the same year, 985,458,532 lire.

The number and tonnage of merchant vessels belonging to the kingdom, on January 1st, 1874, were as follows: 17,562 sailing vessels, aggregating 925,337 tons burthen; and 103 steamers, of a total burthen of 24,476 tons. Of the sailing vessels, 9074 were under 6 tons each.

According to the present constitution of Italy, the executive power belongs exclusively to the sovereign, and is exercised by him through responsible ministers. The legislative authority vests conjointly in the king and parliament, the latter consisting of two chambers, a Senate and a Chamber of Deputies. The Senate is composed of the princes of the royal house who are of age, and of an unlimited number of members, above forty years old, who are nominated by the king for life; a condition of the nomination being that the person should either fill a high office, or have acquired fame in science, literature, or any other pursuit tending to the benefit of the nation: or, finally, should pay taxes to the annual amount of 3000 lire. The members of the Chamber of Deputies are elected by a majority of all citizens who are twenty-five years of age and pay taxes to the amount of 40 lire. A deputy must be thirty years old, and must have the requisites demanded by the electoral law, among them a slight property qualification. Neither senators nor deputies receive any salary.

The following are the budget estimates for 1875:

Estimated revenue,	1,344,164,158 lire.
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Estimated expenditures,	1,575,487,190 "
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The entire public debt, at the end of 1873, was 9,757,613,267 lire.

The actual strength of the army, at the end of December, 1873, was:

Number of men under arms (peace footing),	199,557
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Number of men on unlimited furlough,	<u>244,952</u>
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Total (war footing),	444,509
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The navy, at the commencement of 1875, consisted of 95 ships of war, carrying 1256 guns. Of these, 9 were ironclads, carrying 346 guns, 46 were screw steamers, carrying 693 guns, and 32 paddle steamers, carrying 113 guns.

The total length of railways opened for traffic, at the end of 1874, was 4607 English miles.

The number of post offices at the commencement of 1874 was 2709. In the year 1873 the post office carried 504,402,431 letters and 94,402,596 printed parcels.

The length of telegraphic lines, on the 1st of January, 1874, was 12,622 English miles, nearly two-thirds of the whole belonging to the government. There were, at the same date, 1408 telegraphic offices. The number of private telegrams during 1873 was 4,670,090, and of official telegrams, 163,852.

Under the new Italian government, a great part of the property confiscated from the monastic establishments has been devoted to the cause of public education. In addition to this, the Parliament votes an annual credit of 15,000,000 lire for the same purpose. Since the commencement of the year 1860 there were opened throughout the kingdom thirty-three model schools. Notwithstanding these important aids to instruction, education still stands very low. According to the census of 1864, out of a total population of 21,703,710 souls, there were about 17,000,000 who could neither read nor write. Piedmont occupied the first place, Sicily the last, on the register of knowledge. In the Basilicata, Calabria, and Sicily, more than nine-tenths of the population could neither read nor write.

* One lire equals 19.3 cents gold.

There are twenty-two universities in Italy, many of them of ancient foundation. By a decree of the Minister of Public Instruction, issued in 1871, six high-schools—Naples, Pavia, Turin, Bologna, Florence, and Parma—were declared first-class universities of the kingdom. The number of students at all the universities was returned as 10,524 in 1871.

Commission from ITALY to the International Exhibition:

H. E. BARON BLANC, Minister Plenipotentiary.

COUNT B. LITTA, First Secretary of Legation.

CHEVALIER ALONZO M. VITI, Vice-Consul.

ANGELO M. GIANELLI, Agent of the Central Committee of Florence.

ITALY.

(*North of Nave, Columns 1 to 5.*)

Mining and Metallurgy.

Minerals, Ores, Stone, Mining Products.	
1 Tagliavia, Francesco, & Co., Messina.—Collection of minerals.	100
2 Fontana Brothers, Luserna, Turin.—Flagstones.	102
3 Tassi, Peter, Leghorn.—Yellow marble and alabaster.	102
4 Chamber of Commerce and Arts, Sienna.—Marble and alabaster stone.	102
5 Stock Company for Manufacturing Bricks, Reggio, Emilia.—Cement, limestone.	103
6 Crispo, Moncesada Carlo, Catania.—Limestone.	103
7 Macagnani, Ulisse, Bologna.—Aromatic earth of Cattu.	104
8 Bolari and Yellow Earth Co., Sienna.—Bolari and yellow earth, earth for coloring.	104
9 Furse, Drottey, & Co., Rome.—Bolari earth of Sienna.	104
10 Molfini, Luigi, Genoa.—Lithographic stone.	106
11 Scammano Cav. Michele, Catania.—Cedras	107
12 Birindelli, Carlo, Florence.—Colalii water.	107
13 Spedalieri, Ba Felice, Catania.—Sulphur.	107
14 Count Aristide, Castrocaro.—Mineral waters.	107
15 Romano, Gaetano, Palermo.—Sulphur.	107
16 Scavo Vita Brothers, Catania.—Sulphur.	107
17 Dily, Edoardo, Catania.—Sulphur.	107
18 Ardizzone, Francesco, Catania.—Sulphur.	107
19 Pennini, Baron of Floristallo, Catania.—Sulphur.	107
20 Cesena Sulphur Co. (Limited), Cesena.—Raw and refined sulphur.	107
21 Bartolini dott Cesare, Sienna.—Fossil flour.	107
Metallurgical Products.	
22 Fornara, Gio., & Co., Turin.—Wire.	111
23 Ponsard & Gigli, Florence.—Iron, manganese.	112

BRAZIL.—STATISTICAL PREFACE.

BRAZIL is the most extensive state of South America. Towards the interior, it borders on all the other states of that continent except Chili and Buenos Ayres—on Uruguay, the Argentine Confederation, Paraguay, Bolivia, Peru, Ecuador, New Granada, Venezuela, and English, Dutch, and French Guiana; while its seaboard, beginning about 200 miles to the north of the Amazon, and reaching to within the same distance of the Plata, projects into the Atlantic full 1000 miles to the east of the direct line between its two extremes. This immense country extends between latitude $4^{\circ} 30'$ north and 33° south, and between longitude 35° and 70° west, being, in round numbers, 2600 miles long and 2500 broad. The area, according to official accounts, is 3,100,000 square miles, with a population, in 1872, of 10,196,328 including 1,683,684 slaves, and consisting of aborigines, Africans, and Europeans, the first being proportionately fewer than in most parts of America.

Brazil differs in many respects from most of the other divisions of the new continent. It knows nothing of the volcanoes and earthquakes of the Pacific coast; with winds blowing constantly from the Atlantic Ocean, it is exempted from those droughts which are always blighting one or other of the slopes of the Andes, the remoter slope in Peru and Chili, and the nearer in Buenos Ayres and Patagonia; its mines, again, are as famous for gold and diamonds as those of the western Cordilleras for silver. In its hydrography, Brazil contrasts unfavorably with the other divisions. While the Amazon and the Plata, the Mississippi and the St. Lawrence—not to mention countless rivers of inferior magnitude on both shores—are for the most part practicable almost to their sources, the streams of Brazil, with the exception of the Amazon, are mostly impeded throughout by cataracts and shallows, thus counterbalancing, as it were, its matchless seaward facilities by the deficiencies of its inland communications. Further, the most navigable of these streams, instead of entering the open sea, mingle their waters with those of the Plata or of the Amazon—the Parana and the Uruguay joining the former, and the Madeira, the Tapojos, the Zingu, and the Tocantins, the latter; and even among those that do send their tribute at once to the ocean, a similar direction is sometimes impressed by the dividing ridges—the San Francisco, for instance, by far the largest of them, running to the northward parallel with the southeast coast through 11° of latitude, and leaving only 4° of longitude for its remaining course to the Atlantic. These hydrographic peculiarities must be the more strongly felt, inasmuch as a humid surface and a luxuriant vegetation conspire to render ordinary roads all but impossible.

Among the mineral treasures, besides gold and diamonds, already mentioned, iron of superior quality is abundant; and salt, also, is extensively produced in saline marshes by the alternate processes, according to the season, of inundation and evaporation. The productions of the soil are, of course, equally various and rich. The cotton is naturally excellent, and the tea-plant of China has been introduced, though hitherto with indifferent success. The exports necessarily vary in different sections of the country. From the north, they are coffee, cotton, cocoa, sugar, and tobacco; from the south, hides, tallow, horns, etc.; and from the middle, drugs, diamonds, gold dust, dyes, rice, manioc, tapioca, spirits, and rosewood.

The total value of the imports into Brazil, including bullion and specie, averaged about \$91,000,000 in the five years, 1869-1873, and that of the exports during the same period, likewise including bullion and specie, about \$110,000,000.

The executive authority is vested in the Emperor, who, besides being aided by a council of state, must act through responsible ministers. The legislature consists of two chambers, which sit four months every year. Both the deputies and the senators, who must have annual incomes respectively of 800 milrees and 1600, are indirectly elected by voters who must possess 200 milrees per annum—the former for four years, and the latter for life. The senate, however, appears to represent the crown as well as the people, inasmuch as each constituency merely nominates three individuals for his majesty's choice of one. Justices of the peace, also, are appointed by the respective communities; and in the courts generally, whether civil or criminal, there prevails trial by jury.

The budget for the year ending June 30th, 1876, calculates the receipts at 107,-133,070 milrees, and the expenditures at 102,634,053 milrees.* The public debt, on the 1st of April, 1875, was, including paper money, 664,739,395 milrees.

In a vote passed by the House of Congress, June, 1869, the strength of the standing army was fixed at 30,000 on the peace footing, and at 60,000 on the war footing. There were actually under arms, according to official reports, at the end of April, 1874, 28,933 troops, of which number 2397 were in garrison in Paraguay.

The imperial navy consisted, in 1875, of 61 men-of-war, carrying 230 guns, and crews aggregating 4136.

The empire possessed, at the end of 1873, railways of a total length of 714 English miles, open for traffic. There were railways of an aggregate length of 397 miles in course of construction at the end of June, 1874. There were, at the beginning of the year 1874, telegraph lines to the extent of 3375 miles. The number of offices was 74 at the same date. The post office carried 12,251,000 letters in the year 1873, of which number 6,548,000 came from or to Rio de Janeiro, the capital.

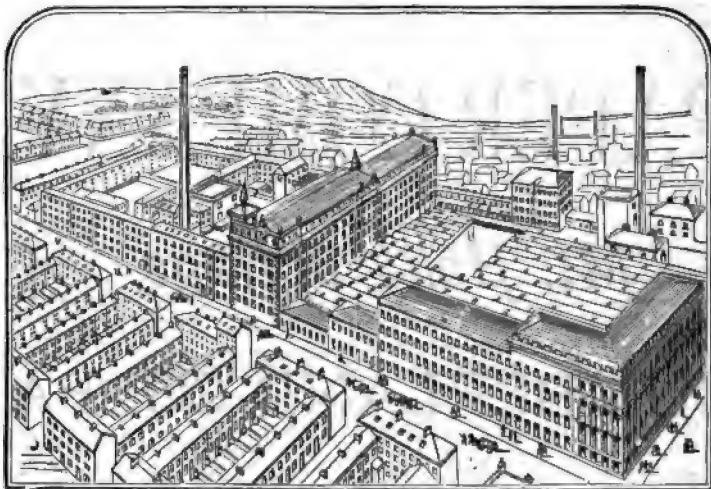
Commission from BRAZIL to the International Exhibition:

HIS HIGHNESS, GASTON D'CRELEANS, Conde d' Eu, Marshal of the Army, President.
 VISCOUNT DE JAGUARY, 1st Vice-President.
 VISCOUNT DE BONN-RETIRO, 2d Vice-President.
 HIS EXCELLENCY, A. P. DE CARVALHO BORGES, Envoy Extraordinary and Minister
 Plenipotentiary of His Majesty the Emperor of Brazil.
 VISCOUNT DE SOUZA FRANCO.
 JOAQUIN ANTONIO DE AZEVEDO.

* The milrees = 1000 reis.

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BRAZIL.

(*North of Nave, Columns 58 to 61.*)

Minerals, Metallurgical Products.

Minerals, Ores, Stone, Mining Products.

1 Province of Parana.	
<i>a</i> Specimens of rocks and quartz.	100
<i>b</i> Slates.	102
<i>c</i> Lime.	103
<i>d</i> Clays, kaolin, and yellow and white argil.	104
2 Province of Goyaz.—Minerals.	100
3 Garceix, Prof.—Collection of minerals from the province of Minas-Geraes.	100
4 Lemos, T.—Collection of minerals.	100
5 Góes, Pereira de.—Collection of minerals.	100
6 Province of Alagoas.—Minerals.	100
7 Director-General of the Colony of Mucury.—Collection of minerals.	100
8 Province of Bahia.—Collection of minerals.	100
9 Province of Minas-Geraes.—Rough diamonds.	100
10 Province of Rio-Grande-do-Sul.	
<i>a</i> Minerals.	100
<i>b</i> Coal.	101
<i>c</i> Marble.	102
11 Province of S. Paulo.	
<i>a</i> Collection of minerals.	100
<i>b</i> Argil.	104

12 Barbacena, Viscount de.—Coal.	101
13 Resende, X.—Pitchetone.	102
14 Villa-Franca, Baron de.—Peat.	102
15 Lendenberg, B.—Lime and cements.	103
16 Zuparana, Baron de.—Calcareous specimens.	103
17 Freitas, Teixeira de.—Lime.	102
18 Ostermark, Ch.—Lime.	103
19 Carrea, Lurencio.—Argil from Jaboticabal (province of S. Paulo).	104
20 Souza, Paulo.—Argil.	104
21 Goncalves, José.—Calcined kaolin.	104
22 Province of Minas-Geraes.—Cristallized quartz.	106
23 Ribas, La.—Pumice stone.	108

Metallurgical Products.

24 Province of Goyaz.—Golddust.	110
25 Lemos, P. L., & Miranda, Leone.—Golddust and auriferous minerals.	110
26 Province of Sancta Catharina.—Iron and nickel.	111
27 Ipanema Iron Works.—Iron.	111
28 Garre, F.—Milled lead.	113

ARGENTINE REPUBLIC.—STATISTICAL PREFACE.

THE Argentine Republic—the confederation of the Rio de la Plata, or River of Silver, South America—is a federal union of fourteen provinces and three large territories, covering an almost unbroken plain of 1,200,000 square miles, with a population of about 2,000,000 inhabitants. It extends from 20° south latitude to the straits of Magellan, and from 59° west longitude to the Andes.

Each province has its own legislature, courts of justice, and political government; but civil, penal, and commercial laws are common to all the provinces, codes of such laws having been issued by the congress of the confederation.

The President of the republic is elected for a term of six years by the representatives of the provinces, and is not eligible for re-election. The Vice-president, elected in the same manner, fills the office of chairman of the Senate; but has otherwise no political power. The President is commander-in-chief of the troops, and appoints to all civil, military, and judicial offices; but he and his ministers are responsible for

their acts, and liable to impeachment before the Senate by accusation of the House of Representatives. Legislative power is vested in a Senate, of members elected by the provincial legislatures, two from each province, and a House of Representatives, elected by the people, and apportioned to each province according to population. The senators hold their office for nine years, and the representatives for three.

The chief exports of the country are wood, hides, salt beef, and tallow; but its resources embrace all the products of the tropical and temperate zones, as may be seen by the catalogue of its exhibits.

The farming stock of the republic is estimated at 15,000,000 horned cattle, 4,000,000 horses, and 80,000,000 sheep, whose aggregate value cannot fall short of \$200,000,000, gold, yielding about \$50,000,000 of export produce per annum.

The total trade may be estimated at \$100,000,000 per annum. In 1874 the imports amounted to \$55,961,117, against over \$71,000,000 in the previous year. The exports amounted to \$43,104,712, against \$45,869,314 in 1873. The decrease in imports and exports was caused by a severe commercial crisis, from which the country is just recovering.

The annual revenue amounted to \$20,217,231 in 1873, but the crisis reduced it in 1874 to \$16,090,661, or over \$2,000,000 less than in 1872, and nearly \$4,500,000 less than in 1873. The general expenditures in 1874 reached the sum of \$28,596,006. The total debt in January, 1875, was \$68,416,043.

The regular army numbers 10,807 men, divided as follows: cavalry 4800, infantry 4400, artillery 400, and 1173 special troops. The navy is composed of 26 vessels, among them 2 ironclads and 6 gunboats, with crews amounting in all to 900.

The capital of the republic is provisionally situated at the city of Buenos Ayres, capital of the province of the same name.

(The statistics given above have been furnished by the commission of the Argentine Republic.)

A network of railways, constructed mainly at the expense of the State, has been in progress for several years. At the end of the year 1873 there were 664 miles open for traffic, and 642 miles of State railways in course of construction. There were besides, at the end of 1873, railways of a total length of 1997 miles, sanctioned by the government, including an international line from Buenos Ayres to Chili, of 894 miles.

At the end of September, 1873, there were 470 miles of telegraph lines in operation. The total length of telegraph wires at the same date was 8267 miles. The number of telegraphic dispatches during the same year was 170,079.

The post office, in the year 1873, carried 1,493,700 parcels and packets, and 4,574,188 letters. The number of letters carried doubled in the five years from 1869 to 1873.

Commission from the ARGENTINE REPUBLIC to the International Exhibition:

CARLOS CARRANZA, President.

EDWARD SHIPPEN, Vice-President.

EDW. T. DAVISON, Treasurer, Consul-General.

DIEGO DE CASTRO, Secretary.

E. MARA DAVISON, Deputy Member.

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JULIO VICTORICA, Secretary.

EDUARDO OLIVERA,

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DIEGO DE LA FUENTE,

LINO PALCOIS,

RICARDO NEWTON,

LEONARDO PEREYRA,

JOSE M. JURAFDO,

EMILIO DUPORTAL.

ARGENTINE REPUBLIC.

(Nave to South Avenue, Columns 2 to 5.)

Minerals, Ores, Stone.

Minerals, Ores, Stone, Mining Products.

1 Raymond, Hipolito, Province of Mendoza.—Collection of minerals.	100
2 Provincial Commission, Province of Mendoza.—Collection of minerals.	100
3 Lemos, Abraham, Province of Mendoza.—Minerals for paints.	100
4 Treloar, Guillermo A., Province of La Rioja.—Collection of minerals.	100
5 Almonacid & Parchappe, Province of La Rioja.—Collection of minerals.	100
6 Illanes, Manuel J., Province of La Rioja.—Minerals of Cerro de Vinchina.	100
7 Bas-cufian, Francisco, Province of La Rioja.—Minerals.	100
8 Provincial Commission, Province of La Rioja.—Minerals.	100
9 Gelos, Martin, Province of La Rioja.—Minerals of Olta.	100
10 Vega, Daniel de la, Province of La Rioja.—A petrifaction.	100
11 Schröder, Teodoro, Province of La Rioja.—Copper ore.	100
12 Gifford, S., Province of La Rioja.—Silver ore.	100
13 Aguilera, Francisco D., Province of San Juan. a Minerals.	100
b Mineral waters.	107
14 Government of the Province of San Juan.—Collection of minerals.	100
15 Provincial Commission, Province of San Luis.—Collection of minerals.	100
16 Metzler, A., Province of Catamarca.—Minerals.	100
17 Romay, Gabriel, Province of Catamarca.—Iron and antimony ores.	100
18 Provincial Sub-commission of Tinogasta, Province of Catamarca.—Ores of iron, lead, copper, silver, etc.	100
19 Galindez, Clásico, Province of Catamarca.—Silver ore.	100
20 Villafafie, Tristan, Province of Catamarca.—Silver-bearing galena.	100
21 Resoagli, Luis, Province of Corrientes.—Quartz, flint, agate, etc.	100
22 Mansilla, Manuel, Province of Corrientes.—Quartz and agate.	100
23 Galarraga, E. G. de, Province of Corrientes.—Crystal rock.	100
24 Sicard, Juana G. de, Province of Corrientes.—Horn-shaped stone.	100
25 Porta, Felix, Province of Corrientes.—Agglomeration of small stones.	100
26 Acosta de Quirolo, Josefa, Province of Corrientes.—Crystal rock.	100
27 Cufia, Americo, Province of Corrientes.—Agate.	100
28 Cabral y Melo, José Maria, Province of Corrientes.—Crystal rock and flint.	100
29 Pujol, Nicanor, Province of Corrientes.—Iron ore.	100
30 Córdoba University, Province of Córdoba.—Collection of minerals.	100
31 Fragneiro, José M., Province of Córdoba.—Lead containing silver.	100
32 Provincial Commission, Province of Córdoba. a Lead containing silver, gypsum, various minerals.	100
b Marble.	102
c Whetstones.	106
33 Vasquez, Lucrecio, Province of Córdoba.—Emeralds; round-shaped stone made by Indians.	100
34 MacDowell, N., Province of Córdoba.—Minerals.	100
35 Olmos, José V., Province of Córdoba.—Minerals.	100
36 Provincial Commission, Province of Salta. a Galena, silver, iron.	100
b Sulphate of lime.	103
c Kaolin.	104
37 Echevarria, Cecilio, Province of Santa Fé.—Minerals; quartz and agates of Alto Uruguay.	100
38 Rap, Eugenio, Province of Tucuman.—Collection of minerals.	100
39 Government of the Province of Jujuy.—Silver ore from Tilcará.	100
40 Sub-commission of the Department of Diamante, Province of Entre-Ríos.—Stones found on the shores of the Plata y Uruguay.	100
41 Arguello, David, Province of Córdoba. a Silver ore.	100
b Anthracite coal.	101
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ARGENTINE REPUBLIC.

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CLASSIFICATION.

DEPARTMENT II.—MANUFACTURES.

CHEMICALS.

CLASS 200.—Chemicals, pharmaceutical preparations.

Mineral acids, and the methods of manufacture. Sulphuric, nitric, and hydrochloric acids.

The common commercial alkalies, potash, soda, and ammonia, with their carbonates.

Salt and its production. Salt from deposits—native salt. Salt by solar evaporation from sea water. Salt by evaporation from water of saline springs or wells. Rock salt. Ground and table salt.

Bleaching powders and chloride of lime.

Yeast powders, baking powders.

CLASS 201.—Oils, soaps, candles, illuminating and other gases.

Oils from mineral, animal, and vegetable sources. Refined petroleum, benzine, naphtha, and other products of the manufacture. Oils from various seeds, refined, and of various degrees of purity. Olive oil, cottonseed oil, palm oil. Animal oils, of various kinds, in their refined state. Oils prepared for special purposes besides lighting and for food. Lubricating oils.

Soaps and detergent preparations.

Candles, stearine, glycerine, paraffine, etc., spermaceti.

Illuminating gas and its manufacture.

Oxygen gas, and its application for heating, lighting, metallurgy, and as a remedial agent.

Chlorine and carbonic acid.

CLASS 202.—Paints, pigments, dyes, colors, turpentine, varnishes, printing inks, writing inks, blacking.

CLASS 203.—Flavoring extracts, essences, perfumery, pomades, cosmetics.

CLASS 204.—Explosive and fulminating compounds; in small quantities only, and under special regulations, shown in the building only by empty cases and cartridges. Black powder of various grades and sizes. Nitro-glycerine and the methods of using and exploding. Giant powder, dynamite, dualin, tri-nitroglycerine.

CLASS 205.—Pyrotechnics, for display, signaling, missiles.

CERAMICS—POTTERY, PORCELAIN, ETC.

CLASS 206.—Bricks, drain-tiles, terra cotta, and architectural pottery.

CLASS 207.—Fire clay goods, crucibles, pots, furnaces. Chemical stoneware.

CLASS 208.—Tiles, plain, enameled, encaustic; geometric tiles and mosaics. Tiles for pavements and for roofing, etc.

CLASS 209.—Porcelain for purposes of construction. Hardware trimmings, etc.

CLASS 210.—Stone china, for chemists, druggists, etc., earthenware, stoneware, faience, etc.

CLASS 211.—Majolica and Palissy ware.

CLASS 212.—Biscuit-ware, parian, etc.

CLASS 213.—Porcelain for table and toilet use, and for decoration.

GLASS AND GLASSWARE.

CLASS 214.—Glass used in construction and for mirrors. Window glass of various grades of quality and of size. Plate glass, rough, and ground or polished. Toughened glass.

CLASS 215.—Chemical and pharmaceutical glassware, vials, bottles.

CLASS 216.—Decorative glassware.

FURNITURE AND OBJECTS OF GENERAL USE IN CONSTRUCTION AND IN DWELLINGS.

CLASS 217.—Heavy furniture.—Chairs, tables, parlor and chamber suits, office and library furniture, vestibule furniture. Church furniture and decoration.

CLASS 218.—Table furniture.—Glass, china, silver, silver-plate, tea and coffee sets, urns, samovars, epergnes.

CLASS 219.—Mirrors, stained and enameled glass, cut and engraved window-glass, and other decorative objects.

CLASS 220.—Gilt cornices, brackets, picture frames, etc.

CLASS 221.—The nursery and its accessories; children's chairs, walking chairs.

CLASS 222.—Apparatus and fixtures for heating and cooking,—stoves, ranges, heaters, etc.

CLASS 223.—Apparatus for lighting,—gas fixtures, lamps, etc.

CLASS 224.—Kitchen and pantry,—utensils, tinware, and apparatus used in cooking (exclusive of cutlery).

CLASS 225.—Laundry appliances, washing machines, mangles, clothes-wringers, clothes-bars, ironing-tables.

CLASS 226.—Bath-room and water closet, shower bath, earth closet.

CLASS 227.—Manufactured parts of buildings,—sash, blinds, mantels, metal work, etc.

YARNS AND WOVEN GOODS OF VEGETABLE OR MINERAL MATERIALS.

CLASS 228.—Woven fabrics of mineral origin.—Wire cloths, sieve cloth, wire screens, bolting cloth.

Asbestos fibre, spun and woven, with the clothing manufactured from it.

Glass thread, floss, and fabrics.

CLASS 229.—Coarse fibres, of grass, rattan, cocoanut, and bark.

Matting, Chinese, Japanese, palm-leaf, grass, and rushes.

Floor cloths of rattan and cocoanut fibres, aloe fibre, etc.

CLASS 230.—Cotton yarns and fabrics, bleached and unbleached.

Cotton sheeting and shirting, plain and twilled.

Cotton canvas and duck. Awnings, tents.

CLASS 231.—Dyed cotton fabrics, exclusive of prints and calicoes.

CLASS 232.—Cotton prints and calicoes, including handkerchiefs, scarfs, etc.

CLASS 233.—Linen and other vegetable fabrics, uncolored or dyed.

CLASS 234.—Floor oil cloths, and other painted and enameled tissues, and imitation of leather, with a woven base.

WOVEN AND FELTED GOODS OF WOOL AND MIXTURES OF WOOL.

CLASS 235.—Card wool fabrics.—Yarns, broadcloth, doeskins, fancy cassimeres. Felted goods.

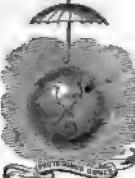
CLASS 236.—Flannels.—Plain flannels, domets, opera and fancy.

ESTABLISHED 1810.

W.A.DROWN & CO.

SUPERIOR
UMBRELLAS
AND
PARASOLS.

Manufactories in Philadelphia.



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PHILADELPHIA.

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BRILLIANT COAL-OIL LAMP, SUITABLE FOR HOME, SUNDAY SCHOOLS
AND LECTURERS. ILLUSTRATED CATALOGUES FREE.

W.Y. McALLISTER 728 CHESTNUT ST. PHILA. PA.

TWENTY-EIGHTH ANNUAL REPORT OF THE PENN MUTUAL LIFE INSURANCE CO.

OFFICE, 921 CHESTNUT STREET, PHILADELPHIA.

ASSETS, JAN. 1st, 1876.

United States bonds, Philadelphia and other stocks and loans,	\$1,770,477 50
Mortgages and ground rents upon property appraised at \$5,340,000 all first items.	1,107,308 84
Estate owned by Co., premium notes and loans secured by collateral.	349,186 53
Cash on hand and in trust companies.	823,610 13
Scrip dividends held by Co.,	101,010 62
Balance in hand of agents,	113,030 00
All other securities,	17,953 48
	326,846 14
	\$5,504,339 24

LIABILITIES.

Losses reported, but not yet due,	\$90,920 00
Reserve at 4 per cent interest required to insure outstanding risks,	4,553,118 00
Scrip yet outstanding,	113,030 00
	4,756,438 00
Surplus to policy holders, 4 per cent. basis,	747,891 24
Surplus to policy holders, 4% per cent. basis,	1,083,091 24
Total number of policies issued in 1875,	2,093
Polices in force Jan. 1, 1876,	9,545
Amount at risk,	\$28,389,393 00

SAMUEL C. HUEY, President.
H. S. STEPHENS, Second Vice-President.
HENRY AUSTIE, Secretary.

SAMUEL E. STOKES, Vice-President.
JAMES WEIR MASON, Actuary.



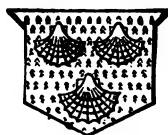
HASELTINE GALLERIES,
1125 and 1127 Chestnut St., Philadelphia.

BRITISH ADVERTISEMENT.

Vienna Universal



Exhibition.



Trade Mark.

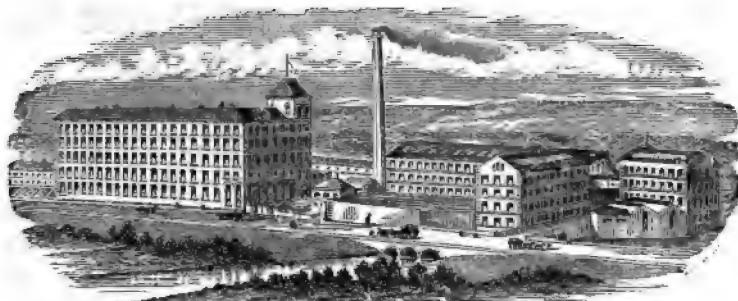
Medal for Merit,



1873.

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Cotton Spinners,
AND MANUFACTURERS OF
SEWING COTTON,**

Remarkable for its strength, pliability, evenness, and freedom from knots. It meets all the requirements of the different kinds of Sewing Machines, and is equally suitable for hand use.



**JOHN DEWHURST & SONS,
BELLE-VUE MILLS,
SKIPTON, YORKSHIRE**

COTTON SPINNERS FROM A.D. 1794.
SEWING COTTON MANUFACTURERS FROM A.D. 1870.

—
**AGENTS IN THE UNITED STATES,
MESSRS. WILSON & MERRILL, BOSTON.**

- CLASS 237.**—Blankets, robes, and shawls.
CLASS 238.—Combined wool fabrics.—Worsted, yarns, dress goods for women's wear, delaines, serges, poplins, merinoes.
CLASS 239.—Carpets, rugs, etc.—Brussels, melton, tapestry, Brussels, Axminster, Venetian, ingrain, felted carpetings, druggets, rugs, etc.
CLASS 240.—Hair, alpaca, goat's hair, camel's hair, and other fabrics, mixed or unmixed with wool.
CLASS 241.—Printed and embossed woolen cloths, table covers, patent velvets.

SILK AND SILK FABRICS, AND MIXTURES IN WHICH SILK IS THE PREDOMINATING MATERIAL.

- CLASS 242.**—Cocoons and raw silk as reeled from the cocoon, thrown or twisted silks in the gum.
CLASS 243.—Thrown or twisted silks, boiled off or dyed, in hanks, skeins, or on spools.
CLASS 244.—Spun silk yarns and fabrics, and the materials from which they are made.
CLASS 245.—Plain woven silks, lutestrings, sarsnets, satins, serges, foulards, tissues for hat and millinery purposes, etc.
CLASS 246.—Figured silk piece goods, woven or printed. Upholstery silks, etc.
CLASS 247.—Capes, velvets, gauzes, cravats, handkerchiefs, hosiery, knit goods, laces, scarfs, ties, veils, all descriptions of cut and made up silks.
CLASS 248.—Ribbons, plain, fancy, and velvet.
CLASS 249.—Bindings, braids, cords, galloons, ladies' dress trimmings, upholsterers', tailors', military, and miscellaneous trimmings.

CLOTHING, JEWELRY, AND ORNAMENTS, TRAVELING EQUIPMENTS.

- CLASS 250.**—Ready-made clothing, knit goods and hosiery, military clothing, church vestments, costumes, waterproof clothing, and clothing for special objects.
CLASS 251.—Hats, caps, boots and shoes, gloves, mittens, etc., straw and palm leaf hats, bonnets, and millinery.
CLASS 252.—Laces, embroideries, and trimmings for clothing, furniture, and carriages.
CLASS 253.—Jewelry and ornaments worn upon the person.
CLASS 254.—Artificial flowers, coiffures, buttons, trimmings, pins, hooks and eyes, fans, umbrellas, sunshades, walking-canies, pipes, and small objects of dress or adornment, exclusive of jewelry. Toys and fancy articles.
CLASS 255.—Fancy leather work, pocketbooks, toilet cases, traveling equipments, valises, and trunks.
CLASS 256.—Furs.
CLASS 257.—Historical collections of costumes, national costumes.

PAPER, BLANK BOOKS, AND STATIONERY.

- CLASS 258.**—Stationery for the desk, stationers' articles, pens, pencils, inkstands, and other apparatus of writing and drawing.
CLASS 259.—Writing paper and envelopes, blank-book paper, bond paper, tracing paper, tracing linen, tissue paper, etc., etc.
CLASS 260.—Printing paper for books, newspapers, etc.
 Wrapping paper of all grades, cartridge and manilla paper, paper bags.
CLASS 261.—Blank books; sets of account books, specimens of ruling and binding, including blanks, bill heads, etc., book binding.
CLASS 262.—Cards; playing cards, cardboard, binders' board, pasteboard, paper or cardboard boxes.
CLASS 263.—Building paper, pasteboard for walls, cane fibre felt for car-wheels, ornaments, etc.
CLASS 264.—Wall papers, enamelled and colored papers; imitations of leather, wood, etc.

CLASSIFICATION.

MILITARY AND NAVAL ARMAMENTS, ORDNANCE, FIREARMS, AND HUNTING APPARATUS.

- CLASS 265.—Military small-arms, muskets, pistols, and magazine guns, with their ammunition.
- CLASS 266.—Light artillery, compound guns, machine guns, mitrailleuses, etc.
- CLASS 267.—Heavy ordnance and its accessories.
- CLASS 268.—Knives, swords, spears, and dirks.
- CLASS 269.—Firearms used for sporting and hunting, also other implements for the same purpose.
- CLASS 270.—Traps for game, birds, vermin, etc.

MEDICINE, SURGERY, PROTHESIS.

- CLASS 272.—Medicines; officinal (in any authoritative pharmacopœia), articles of the *materia medica*, preparations, unofficial.
- CLASS 273.—Dietetic preparations, as beef extract and other articles intended especially for the sick.
- CLASS 274.—Pharmaceutical apparatus.
- CLASS 275.—Instruments for physical diagnosis, clinical thermometers, stethoscopes, ophthalmoscopes, etc. (except clinical microscopes, etc., for which see Class 324).
- CLASS 276.—Surgical instruments and appliances, with dressings, apparatus for deformities, prothesis, obstetrical instruments.
- CLASS 277.—Dental instruments and appliances.
- CLASS 278.—Vehicles and appliances for the transportation of the sick and wounded, during peace and war, on shore or at sea.

HARDWARE, EDGE TOOLS, CUTLERY, AND METALLIC PRODUCTS.

- CLASS 280.—Hand tools and instruments used by carpenters, joiners, and for wood and stone in general. Miscellaneous hand tools used in industries, such as jewellers', engravers'.
- CLASS 281.—Cutlery, knives, penknives, scissors, razors, razor straps, skates, and implements sold by cutlers.
- CLASS 282.—Emery and sand paper, polishing powders, polishing and burnishing stones.
- CLASS 283.—Metal hollow ware, ornamental castings.
- CLASS 284.—Hardware used in construction, exclusive of tools and implements. Spikes, nails, screws, tacks, bolts, locks, latches, hinges, pulleys. Plumbers' and gas fitters' hardware, furniture fittings, ships' hardware, saddlers' hardware, and harness fittings and trimmings.

FABRICS OF VEGETABLE, ANIMAL, OR MINERAL MATERIALS.

- CLASS 285.—India rubber goods and manufactures.
- CLASS 286.—Brushes.
- CLASS 287.—Ropes, cordage.
- CLASS 288.—Flags, insignia, emblems.
- CLASS 289.—Wooden and basket ware, papier mache.
- CLASS 290.—Undertakers' furnishing goods, etc.
- CLASS 291.—Galvanized iron work.

CARRIAGES, VEHICLES, AND ACCESSORIES.

- (For farm vehicles and railway carriages, see Departments of Agriculture and Machinery.)
- CLASS 292.—Pleasure carriages.
- CLASS 293.—Traveling carriages, coaches, stages, omnibuses, hearses, Bath chairs, velocipedes, baby coaches.
- CLASS 294.—Vehicles for movement of goods and heavy objects, carts, wagons, trucks.
- CLASS 295.—Sleighs, sledges, sleds, etc.
- CLASS 296.—Carriage and horse furniture, harness and saddlery, whips, spurs, horse blankets, carriage robes, rugs, etc.

UNITED STATES.

Chemicals.

Chemicals.

- 1 Gantz, Geo. F., & Co., New York, N. Y.—Baking powder. T 47. 200
- 2 Royal Baking Powder Co., New York, N. Y. T 47.
- a Baking powder. 200
- b Flavoring extracts, celery salt. 203
- 3 Hance Bros. & White, Philadelphia, Pa.—Solid and fluid extracts, sugar-coated pills. P 43. 200
- 4 Fries, Alex., & Bros., New York, N. Y. P 48.
- a Chemicals, coloring, etc. 200
- b Artificial fruit and liquor essences, flavors for cigars. 203
- 5 Gordon, W. J. M., Cincinnati, Ohio.—Chemicals, glycerine, sugar-coated pills, podophyllin, hydrastine. P 47. 200
- 6 Rosengarten & Sons, Philadelphia, Pa.—Sulphates of quinine and morphine, etc. P 41. 200
- 7 Warner, Wm. R., & Co., Philadelphia, Pa.—Sugar-coated pills and pharmaceutical preparations. P 43. 200
- 8 Campbell, Sam'l, Philadelphia, Pa. P 47.
- a Medicinal fluid extracts. 200
- b Perfumery and toilet articles. 203
- 9 Kreitzer, M. C., Philadelphia, Pa.—Medicines in marble show case from New Lebanon Valley quarry. T 43. 200
- 10 Keasbey & Mattison, Philadelphia, Pa.—Granular effervescent preparations, gelatine-coated pills, pharmaceutical specialties. P 43. 200
- 11 Twinning & Schiedt, Philadelphia, Pa.—Fluid and solid extracts, sugar-coated pills, elixirs, concentrated preparations, chemicals, syrups, tinctures, powdered drugs. T 41. 200
- 12 Powers & Weightman, Philadelphia, Pa.—Sulphate quinia, salts of cinchona barks, sulphate morphia; chemicals medicinal, photographic, and for the arts. P 41. 200
- 13 Harrison Brothers & Co., Philadelphia, Pa.—Chemicals, alum, sugars of lead, acetates of lime, sulphuric, nitric, muriatic, acetic, and pyrolygneous acids. P 41. 200
- 14 Doerr & Sloan, Philadelphia, Pa.—Lacto-phosphate of lime, iron, and cod-liver oil. T 40. 200
- 15 Mellor & Rittenhouse, Philadelphia, Pa.—Licorice and pharmaceutical extracts; glycerine composition for printers' rollers. P 41. 200
- 16 Stearns, Fred'k, Detroit, Mich.—Pharmaceutical products. P 41. 200
- 17 Dunton, Jacob, & Co., Philadelphia, Pa.—Pills. T 40. 200
- 18 Simes, Wm. F., & Son, Philadelphia, Pa.—Camphor press, sublimed and compressed camphor. P 41. 200
- 19 Tacony Chemical Works, Philadelphia, Pa.—Acids, chemical salts, etc. T 42. 200
- 20 Dreyfus, J. G., & Co., New York, N. Y.—Cream of tartar. T 43. 200
- 21 Mockridge, E., & Co., Philadelphia, Pa.—Azumea. T 47. 200
- 22 Bullock & Crenshaw, Philadelphia, Pa.—Sugar-coated pills, chemical apparatus. P 41. 200
- 23 Pennsylvania Salt Manufacturing Co., Philadelphia, Pa.—Kryolith, alum, lye, sodas, acids, chlo. calcium, and alumina. T 42. 200
- 24 Savage, Keyser, & Stovell, Philadelphia, Pa.—Acids and salts. T 44. 200
- 25 Philadelphia Quartz Co., Philadelphia, Pa.—Silicate of soda. T 45. 200
- 26 Coyne, Geo. S., Philadelphia, Pa. T 44.
- a Acids and chemicals. 200
- b Dyestuffs. 200
- 27 Ohio River Salt Co., Pomeroy, Ohio.—Coarse, fine, and dairy salt. T 44. 200
- 28 Condit, Hauser, & Co., Newark, N. J.—Metallic salts, electro-plating materials; hatters', dyers', jewelers', and manufacturers' chemicals. P 49. 200
- 29 Baker, H. J., & Bro., New York, N. Y.—Refined saltpetre, borax and camphor; epsom salts, castor oil. T 49. 200
- 30 Lewis, John T., & Bros., Philadelphia, Pa. T 42.
- a Acids. 200
- b White and red lead, litharge, orange mineral, paints, colors, and oils. 200
- 31 Silliman Chemical Works, Philadelphia, Pa.—Chemical products from tar and fine chemicals known as Fresenius's tests. P 43. 200
- 32 Wyeth, John, & Bro., Philadelphia, Pa.—Pharmaceutical preparations, drugs and compressed pills. P 41. 200
- 33 Waterloo Yeast Co., New York, N. Y.—Dry hop yeast cakes. T 47. 200
- 34 McKesson & Robbins, New York, N. Y.—Pharmaceutical preparations, oils, and drugs. P 43. 200
- 35 White, Geo. H., Jersey City, N. J.—Saccharated pepsin and codliver oil. T 50. 200

Chemicals, Oils, Soaps.

- 36 Kurlbaum & Co., Philadelphia, Pa.**—Refined camphor and chemical preparations. P 49. 200
- 37 Crawford Bros., New York, N. Y.**—Baking powder. T 47. 200
- 38 Libe, John, C., Philadelphia, Pa.**—Baking yeast powder. T 47. 200
- 39 McIlvaine Brothers, Philadelphia, Pa.**—Ground and powdered drugs, paints, etc. P 43. 200
- 40 Smith, Hanway, & Co., Baltimore, Md.**—Baking powder. T 47. 200
- 41 Metcalf, Theo., & Co., Boston, Mass.** T 49.
a Pharmaceutical and chemical preparations. 200
b Sachet powders, perfumery. 203
- 42 Chessman, W. H., Boston, Mass.**—Pure lime from Mississoula Lime Co., Highgate Springs, Vt. T 50. 200
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- 44 Hagner Drug Milling Co., Philadelphia, Pa.**—Powdering, grinding, flaking, crushing, and other mill work. T 51. 200
- 45 Bower, Henry, Philadelphia, Pa.**—Glycerine, stearic and oleic acids, prussiate of potash, sulphate of ammonia. T 43. 200
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- 56 Mackown, Bower, Ellis, & Co., Philadelphia, Pa.**—Drugs and chemicals. T 43. 200
- 57 Bailey, John T., & Co., Philadelphia, Pa.**—Salt. B 68. 200
- 58 Phillips & Jacobs, Philadelphia, Pa.**—Illustration of the recovery of gold and silver from wastes in the industrial arts. T 46. 200
- 59 Tilden & Co., New Lebanon, N. Y.**—Fluid and solid medicinal extracts, sugar-coated pills, pharmaceutical preparations, bromo-chloralum, etc. P 43. 200
- 60 White, Chas. T., & Co., New York, N. Y.**—Pharmaceutical chemicals, quinia, morphia, strychnia, iodides, bromides, acids C. P., etc. P 43. 200
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- 82 Williams, J. B., & Co., Glastonbury, Conn.**—Soaps. P 47. 201
- 83 Brown, Robt. B., & Co., St. Louis, Mo.**—Castor oil. T 50. 201

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- 277 Mount Washington Glass Works,** New Bedford, Mass.
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- 844 Sachse, F., & Son, Philadelphia, Pa.—Dress, cricket, fire, base ball, boating, yachting, and society shirts.** F 69. 250
- 845 Butterick, E., & Co., New York, N. Y.—Paper patterns for ladies' and children's garments.** H 70. 250
- 846 Smith & Van Culin, Philadelphia, Pa.—White and colored shirts.** F 71. 250
- 847 Chapman, Mrs. Harriet M., Philadelphia, Pa.—Skirt supporting shoulder brace and puff corset.** F 69. 250
- 848 Politzer, Jacob, Philadelphia, Pa.—Ladies' dresses and theatre costumes.** F 70. 250
- 849 Schuyler, Hartley, & Graham, New York, N. Y.—Military and naval equipments, society and theatrical goods.** F 70. 250
- 850 Glazier, J. J., Bro. & Co., Philadelphia, Pa.—Brown, bleached, and colored hose and half hose.** F 72. 250
- 851 Judson Bros., New York, N. Y.—Shirts, underwear, drawers.** F 70. 250
- 852 Thalheimer & Hirsch, Philadelphia, Pa.—Gentlemen's white and fancy shirts, underwear, collars, and cuffs.** F 71. 250

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- 853 Michaelis & Kaskel, New York, N. Y.**—Shirts, underwear, and pajamas; anti-rheumatic flannels. F 67. 250
- 854 Harvey & Baird, Philadelphia, Pa.**—Shirts. F 72. 250
- 855 Scott, J. W., & Co., Philadelphia, Pa.**—Shirts, collars, cuffs, undershirts, drawers, and men's furnishing goods. F 70. 250
- 856 Devlin & Co., New York, N. Y.**—Clothing for men and boys, uniforms of army, navy, and national guard, gentlemen's house garments. F 67. 250
- 857 Prindle, G. H., Philadelphia, Pa.**—Muffs and boas, caps, cloaks, aigghans, capes, hoods, designs for bed spreads. F 70. 250
- 858 Moore, George, New York, N. Y.**—Bias and bias neck cutter. H 71. 250
- 859 Thomas, A. W., Philadelphia, Pa.**—Bustle, skirt elevator, bosom form. F 70. 250
- 860 Rosenbach & Co., Philadelphia, Pa.**—Shirts, pantaloons, overalls, drawrs. F 68. 250
- 861 Conrad Bros., Philadelphia, Pa.**—Shirts, collars, cuffs, etc. F 67. 250
- 862 National Suspender Co., New York, N. Y.**—Shoulder braces and suspenders. F 68. 250
- 863 Cohn, M., & Co., Novelty Corset Works, New York, N.Y.**—Woven corsets. F 69. 250
- 864 Piqua Woolen Mills, Piqua, Ohio.**—Jackets and woolen socks. B 75. 250
- 865 Taylor, S. T., New York, N. Y.**—System of dressmaking, bias cutter, fashion journals. N 65. 250
- 866 Hopkins, W. T., Philadelphia, Pa.**—Ladies' and children's undergarments, infants' dresses, hoop skirts, corsets, panniers, bustles. F 69. 250
- 867 Horstmann, Wm. H., & Sons, Philadelphia, Pa.**—Military and theatrical goods. H 73. 250
- 868 Demorest, Mme., New York, N. Y.**—Fashion patterns and bulletin, dress-cutting system, corsets, shoulder brace, skirt and stocking suspenders. F 68. 250
- 869 Nashawannuch Manufacturing Co., Easthampton, Mass.**—Elastic rubber suspenders and webs. F 67. 250
- 870 Altman, Moritz, Camden, N. J.**—Cloth leather surface suspenders. F 70. 250
- 871 Thompson, E. O., Philadelphia, Pa.**—Clothing. F 71. 250
- 872 Sternberger, L., & S., Philadelphia, Pa.**—White shirts. F 68. 250
- 873 Norfolk and New Brunswick Hosiery Co., New Brunswick, N. J.**—Ladies', gentlemen's, and children's knitted underwear. F 70. 250
- 874 Warner Bros., New York, N. Y.**—Corset and skirt supporter, corset waist. F 70. 250
- 875 Bowers, Jas., & Co., Newark, N. J.**—Sewed corsets and rivetless corset clasps. F 69. 250
- 876 Atkinson, Henry, Philadelphia, Pa.**—White shirts, buckskin shirts and drawers. F 70. 250
- 877 Zäuner, Henry, Philadelphia, Pa.**—Lace, silk, and meo caps, hand knit and crochet zephyr goods, for infants. F 70. 250
- 878 Sullivan, F. W., & Co., Newark, N. J.**—Cork bosom pad. F 69. 250
- 879 Borm, L., Philadelphia, Pa.**—Dress suit. F 69. 250
- 880 Wilson, J. H., Philadelphia, Pa.**—Military goods. F 70. 250
- 881 Foy & Harmon, New Haven, Conn.**—Skirt supporting corset. F 69. 250
- 882 America Hosiery Co., New Britain, Conn.**—Wool, merino, and cotton underwear, hosiery. F 68. 250
- 883 Worcester Corset Co., Worcester, Mass.**—Corsets, corset and skirt supporters. F 69. 250
- 884 Boston Comfort Corset Co., Boston, Mass.**—Corset without bones. F 69. 250
- 885 Palmer & Williams, Boston, Mass.**—Jacqueline corsets and misses' waists. F 69. 250
- 886 Denham, T. M., & Brother, New Bedford, Mass.**—White laundried shirts and shirt bosoms. F 68. 250
- 887 Rockhill & Wilson, Philadelphia, Pa.**—Clothing. F 69. 250
- 888 Lowell Hosiery Co., Lowell, Mass.**—Women's plain cotton hose. F 69. 250
- 889 Wanamaker & Brown, Philadelphia, Pa.**—Gentlemen's, youths', and children's ready-made clothing; gentlemen's furnishing goods. B 67. 250
- 890 Wanamaker, John, & Co., Philadelphia, Pa.**—Ancient and modern clothing worn by American gentlemen during the past century. T 60. 250
- 891 Smith, Chester L., & Co., Philadelphia, Pa.**—Gentlemen's fine dress shirts. F 68. 250
- 892 Cummings, J. S., & Co., Philadelphia, Pa.**—Scarfs, cravats, stocks, bows, and neck wear. F 68. 250
- 893 Hughes, Thos., & Co., Bristol, Pa.**—Cotton, merino, and wool hosiery. F 70. 250
- 894 Strahan, Hodgson, & Co., New York, N. Y.**—Linen collars and cuffs. F 72. 250
- 895 American Suspender Co., Waterbury, Conn.**—Webbing frills and suspenders. F 68. 250
- 896 Brewster Bros. & Co., Birmingham, Conn.**—Corsets, combined corset and skirt supporters, corset clasps. F 69. 250
- 897 Gabriel, Henry, & Sons, Allentown, Pa.**—Knitted woolen and cotton hosiery. F 68. 250
- 898 American Molded Collar Co., Boston, Mass.**—Combined cloth and paper collars. F 70. 250
- 899 Frost, Geo., & Co., Boston, Mass.**—Corsets, waists, hose supporter, emancipation suit and under-flannel. F 70. 250
- 900 Sweet, Orr, & Co., Wappingers Falls, N. Y.**—Pantaloons, overall, jackets, hunting coats. F 70. 250

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- 901** Bickford, Dana, New York, N. Y.—Knitted articles made on Dana Bickford's knitting machines. F 68. 250
- 902** Dreifus, S., Philadelphia, Pa.—Hand-made zephyr goods; jackets, rubias, hoods, leggings, mittens, caps, sacks, etc. F 70. 250
- 903** Landenberger's, Martin, Sons, Philadelphia, Pa.—Hosiery and knit goods. F 67. 250
- 904** United States Corset Co., New York, N. Y.—Corsets. B 71. 250
- 905** Sharpless & Sons, Philadelphia, Pa.—Ladies' costumes. B 68. 250
- 906** Rothschild Bros. & Gutman, New York, N. Y.—Shirts, drawers, and undershirts. F 69. 250
- 907** Cameron, Wm. & Son, Philadelphia, Pa.—Embroidering, braiding, and stamping designs, children's clothing, indelible ink marking. F 70. 250
- 908** Dress Reform Co., Boston, Mass.—Dress reform clothing. F 71. 250
- 909** Otis Co., Palmer, Mass.—Hosiery and underwear. N 75. 250
- 910** Hayden, James, Philadelphia, Pa.—Shirts, drawers, and necktie shields. F 72. 250
- 911** Peck & Greene, Brooklyn, N. Y.—Worsted and silk goods for theatrical, boating, and general underwear. B 75. 250
- 912** Star Knitting Co., Cohoes, N. Y.—Cotton, woolen, and merino shirts, drawers, pantaloons, and union suits. F 67. 250
- 913** Parsons, J. H., & Co., Cohoes, N. Y.—Cotton, woolen, and merino shirts, drawers, pantaloons, and union suits. F 67. 250
- 914** Brookside Hosiery Mills, Troy, N. Y.—Cotton, woolen, and merino shirts, drawers, pantaloons, and union suits. F 67. 250
- 915** McDonnell, Kline, & Co., Amsterdam, N. Y.—Cotton, woolen, and merino shirts, drawers, pantaloons, and union suits. F 67. 250
- 916** Bennett, E., Brooklyn, N. Y.—Shirts. F 68. 250
- 917** Coon & Van Volkenburgh, Troy, N. Y.—Men's linen collars and cuffs. F 67. 250
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- 1246** Tryon, E. K., jr., & Co. Philadelphia, Pa.—Muzzle loading rifles shot-guns, revolvers, gunmakers' tools, etc. H 70. 269
- 1247** Harder, J., & Son, Lock Haven, Pa.—Single, double, and three barrel guns. H 71. 269
- 1248** Parker Chas., Meriden, Conn.—Double-barreled breechloading shot guns. H 70. 269
- 1249** Harrington & Richardson, Worcester, Mass.—Revolving firearms with shell ejector. H 72. 269
- 1250** Burton, Bethel, Brooklyn, N. Y.—Military and sporting magazine rifles, bayonets, portable cartridge reloader. H 72. 269
- 1251** Grant & Co., Newark, N. J.—Cap rifles and targets. H 72. 269
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- 1252** Boericke & Tafel, Philadelphia, Pa.—Official homeopathic medical preparations, books and periodicals. N 50. 272
- 1253** Wallace Bros., Statesville, N. C.—Materia medica, plants, substances, fruits, woods, mosses, etc. N 58. 272
- 1254** Seabury & Johnson, New York, N. Y.—Plasters. N 52. 272
- 1255** Mitchell, Geo. E., Lowell, Mass.—Surgical, medicinal, and pharmaceutical plasters and plaster compounds, lung protectors. N 53. 272
- 1256** Fehr, Julius, Hoboken, N. J.—Baby powder. N 52. 272
- 1257** Randle, Wm. H., Baltimore, Md.—Botanical medicines. N 52. 272
- 1258** Tims, Wm., Paterson N. J.—Homeopathic pellets. N 52. 272
- 1259** Wilson, B. O., & G. C., Boston, Mass.—Pressed medicinal herbs, leaves, flowers, seeds, roots, barks, etc. N 52. 272
- 1260** Smith's Homeopathic Pharmacy, New York, N. Y.—Homeopathic preparations in tinctures, triturations, and globules, cases for professional and family use. N 54. 272
- 1261** Ayer, J. C., & Co., Lowell, Mass.—Cherry pectoral, cathartic pills, sarsaparilla, ague cure, hair vigor. N 52. 272
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- 1265** Gilbert, Alfred A., Philadelphia, Pa.—Medicine chest and saddlebags. N 51. 274
- 1266** Hechelman, H. W., Allegheny City, Pa.—Anatomical preparations of human ear and eye. N 54. 275
- 1267** McIlroy, T., New York, N. Y.—Invalid, elevating, and fracture bedsteads, surgical operating and dissecting tables, oculists' and surgical operating chair. N 50. 276
- 1268** Condell, J., & Son, New York, N. Y.—Artificial limbs. N 58. 276
- 1269** Everett, B. C., Philadelphia, Pa.—Trusses, supporters, shoulder braces, elastic stockings, belts, and artificial limbs. N 56. 276
- 1270** Taylor, Charles F., New York, N. Y.—Orthopedic apparatus and machines for local exercise. N 52. 276
- 1271** Tiemann, Geo., & Co., New York, N. Y.—Surgical instruments and orthopedic appliances. N 51. 276
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- 1275** Mervine, S. P., jr., Philadelphia, Pa.—Gynaecological apparatus. N 52. 276
- 1276** Gemrig, J. H., Philadelphia, Pa.—Surgical instruments and appliances. N 57. 276
- 1277** Perry, Vincent, Germantown, Pa.—Elastic bandages for surgical purposes. N 57. 276
- 1278** National Surgical Institute, Indianapolis, Ind.—Surgical and mechanical appliances, splints, operating chairs, crutches, supporters, and trusses. N 56. 276
- 1279** Penfield, E. C., & Co., Philadelphia, Pa.—Trusses, etc. N 59. 276
- 1280** Elastic Truss Co., New York, N. Y.—Elastic trusses and abdominal supporters. N 56. 276
- 1281** Blanck, Wm., & Son, Philadelphia, Pa.—Artificial limbs and appliances. N 58. 276
- 1282** Bradford, H. W., Randolph, Mass.—Litholytic; instrument for dissolving calculi. N 51. 276
- 1283** Leiner, Moritz, New York, N. Y.—Surgical instruments. T 46. 276
- 1284** Rhodes, Isaac M., Hancock, Mich.—Easy chair, invalid bed, and fracture apparatus combined. N 59. 276
- 1285** Clement, Richard, Philadelphia, Pa.—Artificial limbs. N 58. 276
- 1286** Horn, W. H., & Bro., Philadelphia, Pa.—Trusses, abdominal supporters, etc. N 59. 276
- 1287** Darrach, S. A., East Orange, N. J.—Wheel crutch and attachments; vulcanized rawhide spine support. N 58. 276
- 1288** Goodier, John, Philadelphia, Pa.—Lever and shield trusses, etc. N 58. 276

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- 1290 Woolley, G. W., Philadelphia, Pa.**—Gynaecological apparatus. N 53. 276
- 1291 Hinkle & Mayon, San Francisco, Cal.**—Surgical and mechanical appliances, splints, operating chairs, crutches, supporters, and trusses. N 56. 276
- 1292 Handy & Boland, Atlanta, Ga.**—Surgical and mechanical appliances, splints, operating chairs, crutches, supporters, and trusses. N 56. 276
- 1293 Kolbe, D. W., Philadelphia, Pa.**—Surgical and orthopedical instruments; artificial limbs. N 53. 276
- 1294 Triumph Truss Co., New York, N. Y.**—Truss and supporter. N 53. 276
- 1295 Kerns, Horatio G., Philadelphia, Pa.**—Surgical and dental instruments. N 56. 276
- 1296 Foster, James A., Philadelphia, Pa.**—Artificial limbs. N 53. 276
- 1297 Pingree, Luther F., Portland, Me.**—Artificial limbs. N 53. 276
- 1298 Otto, F. G., & Sons, New York, N. Y.**—Surgical instruments and orthopedical appliances. N 53. 276
- 1299 Bartlett, Butman, & Packer, Boston, Mass.**—Trusses. N 51. 276
- 1300 Frees, C. A., New York, N. Y.**—Artificial limbs. N 56. 276
- 1301 Palmer, B. F., Philadelphia, Pa.**—New Palmer limbs with safety socket mechanism; new automatic system for universal motion, sound, power, etc. N 54. 276
- 1302 Seeley, I. B., Philadelphia, Pa.**—Hard rubber trusses, abdominal supports, pile instruments, elastic surgical hosiery, bandages, etc. N 53. 276
- 1303 McElroy, C. J., East Cambridge, Mass.**—Glass and family syringes, feeding and drinking tubes, nipple shields, medicine droppers, etc. N 51. 276
- 1304 Miller, Jas. S., Philadelphia, Pa.**—Trusses and braces. N 58. 276
- 1305 Rowand, John R., Philadelphia, Pa.**—Gynaecological apparatus. N 51. 276
- 1306 Burrington, H. H., Providence, R. I.**—Gynaecological apparatus. N 51. 276
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- 1308 Bethell, John P., Philadelphia, Pa.**—Surgical and gynaecological apparatus; artificial steel leg. N 57. 276
- 1309 Philadelphia Truss Co., Philadelphia, Pa.**—Trusses, supporters, shoulder braces, elastic stockings, belts; combination truss and supporter. N 57. 276
- 1310 Gunning, Thos. B., New York, N. Y.**—Fractured jaw and cleft palate appliances; teeth and regulating plates, etc. N 51. 276
- 1311 Spillman, Henry, New Orleans, La.**—Trusses, supporters, and shoulder braces. N 58. 276
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- 1317 Wardle, Thos., Philadelphia, Pa.**—Artificial teeth and models. N 58. 277
- 1318 Brown, E. Parmly, Flushing, N. Y.**—Gold fillings in human teeth, dentists' cases, dental improvements. N 57. 277
- 1319 White, Samuel S., Philadelphia, Pa.**—Artificial teeth, instruments, chairs, dental engines, stools, lathes, brackets, spittoons, gold foils, corundum wheels, etc. N 55. 277
- 1320 White, Chas. A., Philadelphia, Pa.**—Celluloid apparatus and dental flasks, process of forming sets of artificial teeth, artificial dentures. N 56. 277
- 1321 Corfield, H. C., & Co., Philadelphia, Pa.**—Artificial mineral teeth. N 58. 277
- 1322 Allen, J., & Son, New York, N. Y.**—Artificial dentures. N 57. 277
- 1323 Abbey, Chas., & Sons, Philadelphia, Pa.**—Dentists' gold foil. N 58. 277
- 1324 Bonwill, W. G. A., Philadelphia, Pa.**—Electro-magnetic mallet for filling teeth, carving marble, chasing metals, and an autographic printing press; dental chair and engine. N 59. 277
- 1325 Taylor, J. Hare, Philadelphia, Pa.**—Tooth paste, etc. N 57. 277
- 1326 Wardle, S., Cincinnati, Ohio.**—Specimens of dentistry. N 58. 277
- 1327 Neall, Dani. W., Camden, N. J.**—Porcelain teeth. N 57. 277
- 1328 Swallow, J. E., Hagerstown, Md.**—Dentistry; dental plates, obturators, splints, artificial nose, etc. N 58. 277
- 1329 Crowther, D. W., Hagerstown, Md.**—Mechanical and operative dentistry. N 58. 277
- 1330 Scott, Quincy A., Pittsburgh, Pa.**—Atmospheric dish for holding artificial teeth in the mouth, dental specimens, dentrifrice. N 56. 277
- 1331 Ludwig, Schmidt, & Mohl, Houston, Texas.**—Enamel; specimens of teeth. N 52. 277
- 1332 Valleau, William, jr., New York, N. Y.**—Gold and silver leaf, gold and platinum filling for dentists' use. N 57. 277
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- 1334 Cutter, Ephraim, Cambridge, Mass.**—Adjustable chair for invalids. N 58. 278
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- 1335 Collins & Co., New York, N. Y.**—Cast steel tools; sledges. N 67. 280
- 1336 Elgin National Watch Co., Elgin, Ill.**—Watchmakers' tools. P 67. 280

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- 1337 Douglas Axe Manufacturing Co.,** Boston, Mass.—Axes, hatchets, adzes, picks, etc. N 68. 280
- 1338 Pugh, Job T., Philadelphia, Pa.**—Screw augers and auger bits. N 72. 280
- 1339 Conard, A. J., Whitemarsh, Pa.**—Cast steel wood boring implements. P 71. 280
- 1340 Elmira Nobles Manufacturing Co., Elmira, N. Y.**—Carpenters' and shipwrights' tools. N 71. 280
- 1341 Quint, S. H., & Lee, Philadelphia, Pa.**—Stencils, stamps, metallic pattern letters, checks, tags, etc. H 71. 280
- 1342 Carter, Edw d., Troy, N. Y.**—Nickel-plated goods; planes, mechanics' tools. P 69. 280
- 1343 Stanley Rule & Level Co., New Britain, Conn.**—Rules, levels, squares, and carpenters' tools. N 68. 280
- 1344 Billings & Spencer Co., Hartford, Conn.**—Drop forgings, machinists' small tools, sewing machine shuttles. H 72. 280
- 1345 Eddy, Geo. M., & Co., Brooklyn, N. Y.**—Fine steel band saws and tempered steel springs. N 57. 280
- 1346 Rose, Wm., & Bros., Philadelphia, Pa.**—Bricklayers', plasterers', moulders', and saddlers' tools. N 72. 280
- 1347 Cotton, Alfred J., Philadelphia, Pa.**—Stair hand-rail planes and double-edge routers, carpenters' moulding planes. N 69. 280
- 1348 Pratt, Jas. T., & Co., New York, N. Y.**—Tool chests for amateurs or mechanics. N 68. 280
- 1349 Maltby, Curtiss, & Co., New York, N. Y.**—Nail puller. B 77. 280
- 1350 Kohler, Martin, Philadelphia, Pa.**—Knee-rest for tailors. N 70. 280
- 1351 Carter, Henry, New York, N. Y.**—Moulders' and plasterers' tools. N 70. 280
- 1352 Sinsz, Philip, Baltimore, Md.**—Glaziers' diamonds, machinery for circular and oval cutting, engravers' points, carbon tools. N 68. 280
- 1353 King, Josiah, & Son, New York, N. Y.**—Planes and tools for wood workers. N 71. 280
- 1354 Booth, John, & Son, Philadelphia, Pa.**—Carpenters' tools and sundries. N 69. 280
- 1355 D. R. Barton Tool Co., Rochester, N. Y.**—Mechanics' edge tools. N 70. 280
- 1356 American Shovel Co., Birmingham, Conn.**—Shovels and scoops. P 68. 280
- 1357 Johnson, Wm., Hedenberg Works, Newark, N. J.**—Carpenters' and other mechanics' tools and hardware. N 69. 280
- 1358 Hampton, Chas. F., Ardmore, Pa.**—Augers and bits. N 71. 280
- 1359 Price, M., Newark, N. J.**—Axes and edge tools. P 71. 280
- 1360 White, Wm., Newark, N. J.**—Axes, hatchets, adzes, bush hooks, stone hammers, picks, etc.; carriage shaft couplings. P 71. 280
- 1361 Selsor, Geo., & Co., Philadelphia, Pa.**—Hammers, edge and railroad tools, coffee mills, slaw cutters, tacks, and nails. N 68. 280
- 1362 Star Tool Co., Middletown, Conn.**—Machinists' and carpenters' tools; squares, bevels, gauges, rules, etc.; blind trimmings. P 67. 280
- 1363 Snell Manufacturing Co., Fiskdale, Mass.**—Augers, auger bits, and boring machines. P 71. 280
- 1364 Buck Bros., Riverlin Works, Milbury, Mass.**—Shank and socket firmer chisels and gouges, plane irons, screw drivers, nail sets, etc. N 69. 280
- 1365 Maydole, D., & Co., Norwich, N. Y.**—Cast steel hammers. N 71. 280
- 1366 Newlin & Yardley, Philadelphia, Pa.**—Steel shovels, wood screws, and foundry sieves. N 68. 280
- 1367 Davis Level and Tool Co., Springfield, Mass.**—Adjustable levels and planes and iron planes. P 71. 280
- 1368 DeWitt, Morrison, & Kelley, Philadelphia, Pa.**—Carpenters', millwrights', gasfitters', pump, and car builders' machine and auger bits. P 71. 280
- 1369 Shepherd & Lloyd, Philadelphia, Pa.**—Scales, glass cutters, lard presses, and hardware specialties. N 71. 280
- 1370 Rowland, B., & Co., Philadelphia, Pa.**—Shovels, spades, and scoops; draining and ditching tools. N 71. 280
- 1371 Yerkes & Plumb, Philadelphia, Pa.**—Edge tools, hammers; railroad, mining, and blacksmiths' sledges. N 70. 280
- 1372 Bailey, Leonard, & Co., Hartford, Conn.**—Bench planes, try squares, bevels. N 68. 280
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- 1374 Middleboro' Shovel Co., Boston, Mass.**—Shovels and spades. P 72. 280
- 1375 Bemis & Call Hardware & Tool Co., Springfield, Mass.**—Machinists' tools. N 69. 280
- 1376 Clark, Wm. A., Westville, Conn.**—Expansive bits, meat tenderers, screw drivers. N 70. 280
- 1377 Ives, W. A., & Co., New Haven, Conn.**—Wood boring implements, bit braces. N 70. 280
- 1378 Mills, E., & Co., Philadelphia, Pa.**—Braces, bits, bevels, screw drivers, spoke-shaves, squares, and saw pads. P 68. 280
- 1379 Donaldson, J. W., Massillon, Ohio.**—Block stamps for stamping garments for braiding and embroidery. P 68. 280
- 1380 Bailey Wringing Machine Co., New York, N. Y.**—Metallic bench planes, spoke-shaves, box scrapers, etc. N 69. 280
- 1381 Klein, Logan, & Co., Birmingham Tool Manufactory, Birmingham, Pa.**—Picks, mattocks, fireshovels, etc. N 71. 280
- 1382 Crossman, A. W., & Son, West Warren, Mass.**—Carpenters' hand tools. N 70. 280
- 1383 Metallic Plane Co., Auburn, N. Y.**—Iron planes. H 71. 280
- 1384 Ohio Tool Co., Columbus, Ohio.**—Planes, screws, edge tools, plane irons, handles, etc. N 71. 280
- 1385 Palmer, Wm. F., San Francisco, Cal.**—Edge tools. N 70. 280
- 1386 Taylor, Thomas, Providence, R. I.**—Bloodstone burnishers. N 71. 280

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- 1387 Smyth & Pennington, Paterson, N. J.**—Files and rasps. N 69. 280
- 1388 Whitney Manufacturing Co., South Ashburnham, Mass.**—Tools used in manufacturing chairs. V 49. 280
- 1389 Franklin, Mrs. Esther P., Philadelphia, Pa.**—Marking stencils and branding irons. T 58. 280
- 1390 Sandusky Tool Company, Sandusky, Ohio.**—Planes, plane irons, bench and hand screws, chisel and file handles. P 70. 280
- 1391 Hopkins, C., Waltham, Mass.**—Watchmakers' tools. N 58. 280
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- 1404 Union Hardware Co., Wolcottville, Conn.**—Skates, skate straps, tool handles, wood turning, dog collars, etc. N 69. 281
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- 1406 Goldschmidt, Herrmann, New York, N. Y.**—Razor strops. N 71. 281
- 1407 Florence Sewing Machine Co., Florence, Mass.**—Skates. N 71. 281
- 1408 Herder, L., & Son, Philadelphia, Pa.**—Shears and scissors. N 69. 281
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- 1410 Shipley, Howard W., Philadelphia, Pa.—Pocket cutlery. P 71.** 281
- 1411 Seymour, Henry, & Co., New York, N. Y.—Tailors', bankers', and sheep shears, trimmers, and scissors. N 71.** 281
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1876.

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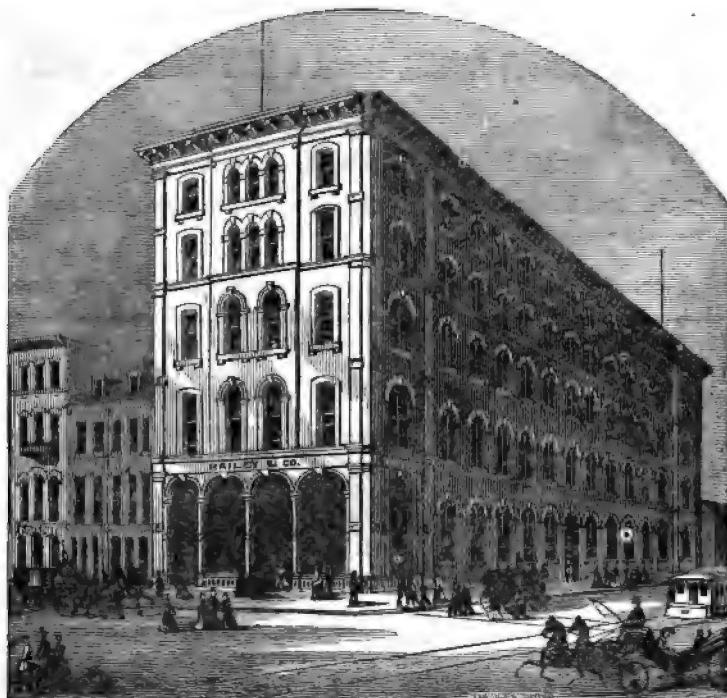
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Chestnut and Twelfth Sts.,

PHILADELPHIA.

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- 1557** Hart, Clarence A., Philadelphia, Pa.—Painted silk banners. P 64. 288
- 1558** Lilley, M. C., & Co., Columbus, Ohio.—Masonic goods and society supplies. P 65. 288
- 1559** Wilson, J. H., Philadelphia, Pa.—Regalias, flags, and banners. F 70. 288
- 1560** New England Bunting Co., Lowell, Mass.—Bunting. B 75. 288
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- 1564** Trasel, Edwd. G., New York, N. Y.—Papier maché household ware, chamber sets, pails, cuspadores, etc. P 64. 289
- 1565** Wakefield Rattan Co., Boston, Mass.—Rattan baskets. T 57. 289
- 1566** Allen, Jas. M., Co., New York, N. Y.—Druggists' turned wood boxes. T 43. 289
- 1567** Waters, E., & Sons, Troy, N. Y.—Boat barrels, camp stools, seats, packages for volatile liquids, etc., made of paper. B 73. 289
- 1568** Jennings Bros., New York, N. Y.—Japanese paper ware. T 68. 289
- 1569** Preston & Merrill, Boston, Mass.—Wooden boxes. P 48. 289
- 1570** Dorman Manufacturing Co., New York, N. Y.—Baskets, urns, carriage bodies, etc. P 59. 289
- 1571** Paxson, Comfort, & Co., Philadelphia, Pa.—Burial robes and dresses; casket trimmings. B 73. 290
- 1572** Smith, Wm. M., West Meriden, Conn.—Casket trimmings, handles, name plates, and ornaments. N 43. 290
- 1573** Rogers, C., & Bros., West Meriden, Conn.—Gold and silver plated coffin and casket trimmings. F 72. 290
- 1574** Chase, F., & P. F., Penn Galvanic Works, Philadelphia, Pa.—Galvanized iron goods, sheet iron, water pipe, boilers, hardware, shipsmithing, railings; bar, hoop, and chain iron. P 68. 291
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- 1577** Philadelphia Galvanizing Co., Philadelphia, Pa.—Galvanized sheet iron pipe, railing, wirework, chairs, boilers, sinks, coal hods, etc. P 69. 291
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- 1579** Falstrom & Tomqvist, Passaic city, N. J.—Galvanized iron cornices and ornamental sheet iron work for buildings. P 68. 291
- 1580** Philadelphia Architectural Iron Co., Philadelphia, Pa.—Galvanized iron and sheet zinc gate entrance. P 70. 291
- 1581** McCullough Iron Co., Philadelphia, Pa.—Galvanized sheet iron. P 70. 291
- 1582** Brown & Owen, Philadelphia, Pa.—Cemetery inclosure, ornamental iron work, and wrought iron pipe. (*Outside.*) 291
- 1583** Cornell, J. B., & J. M., New York, N. Y.—Cast and wrought iron work for buildings, and bridges, girders, columns, stairs, railings, lampposts. P 70. 291
- 1584** Marshall Brothers & Co., Philadelphia, Pa.—Galvanized and leaded iron work. P 71 and *Outside.*

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- | | |
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1586 Buringer Brothers, Dayton, Ohio. —Ohio coat of arms of galvanized iron. (<i>In gable of Ohio State Building.</i>) 291 | Carriages, Vehicles, and Accessories.
1587 Blake Bros. Hardware Co., New Haven, Conn. —Trucks for moving open barrels and kegs. P 69.
1588 Newichawanick Co., South Berwick, Me. —Horse blankets and goods for horse clothing. R 78. |
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GREAT BRITAIN.

(*North of Nave, Columns 23 to 38.*)

Chemicals, Oils, Soap, Candles.

- Chemical Manufactures.**
- 1 Hutchinson, John, & Co., Widnes, Lancashire.**—Soda ash, soda crystals, caustic soda, bicarbonate of soda, salt cake, bleaching powder, and sulphur recovered from vat waste. 200
 - 2 Corbett, John, Stoke Prior Salt Works, Worcestershire.**—Refined salt. 200
 - 3 Richards, Kearne, & Gasquoine, Malins Bank Alkali Works, Sandbach, Cheshire.**—Brine, sulphate of ammonia, soda ash, bicarbonate of soda. 200
 - 4 Gaskell, Deacon, & Co., Widnes, Lancashire.**—Carbonated soda ash, and refined alkali, bleaching powder, soda crystals, bicarbonate of soda, and chloride of calcium. 200
 - 5 Brunner, Mond, & Co., Northwich, Cheshire.**—Alkali and bicarbonate of soda. 200
 - 6 The Desoto Alkali Co. (limited), Widnes, Lancashire.**—Caustic soda, and black ash or ball soda. 200
 - 7 Weldon, Walter, Merton, London.**—Samples and models of apparatus, illustrative of the manufacture of chlorine. 200
 - 8 Runcorn Soap and Alkali Co. (limited), Liverpool.**—Bleaching powder, soda ash, crystals of soda, caustic soda, and refined resin. 200
 - 9 Muspratt Brothers, & Huntley, Liverpool.**—Soda ash, caustic soda, bleaching powder, soda crystals, and bicarbonate of soda. 200
 - 10 Muspratt, James, & Sons, Liverpool.**—Soda ash, cream caustic soda, bleaching powder, chlorate of potash, salt cake, and brimstone. 200
 - 11 Tyne Vale Chemical Co., Northumberland Works, Newcastle-on-Tyne.**—Pure and methylated ether, pure and methylated chloroform, sweet spirit of nitre, pure and commercial chemicals. 200
 - 12 Spence, Peter, Manchester.**—Cry-crystallized alum, in block and crystals, and a new alumino-ferric compound for precipitating sewage and for paper making. 200
 - 13 Higgin, Thomas, & Co., Liverpool.**—Salt. 200
 - 14 The Newcastle Chemical Works Co. (limited), Newcastle-on-Tyne.**—Soda ash, alkali, bleaching powder, crystals and bicarbonate of soda, caustic soda, chloride of calcium. 200
 - 15 White, John & James, Shawfield Works, Glasgow.**—Bichromate of potash. 200
 - 16 Liver Alkali Works Co. (limited), Liverpool.**—Caustic soda. 200
 - 17 Young, James, Kelly, Wemyss Bay, N. B.**—Illustrations of manufacture of carbonate of soda, chlorate of potash, products from petroleum, coal, and shale, preservation of iron ships. 200
 - 18 Greenbank Alkali Co., St. Helen's, Lancashire.**—Chemical products, pure caustic soda, chlorate potash. 200
 - 19 Liver Alkali Works Co. (limited), Liverpool.**—Caustic soda. 200
 - 20 Jennings, T., Brookfield Chemical Works, Cork.**—Carbonate and calcined magnesia. 200
 - 21 Calvert, F. C., & Co., Bradford, Manchester.**
 - a** Carbolic and cresylic acids and derivatives. 200
 - b** Carbolic acid soaps. 201
 - 22 Parkinson Bros., Burnley.**—Baking powder. 200
 - 23 Morson & Son, London, W. C.**—General chemicals and specialties, creatose, pepsine, gelatine, etc. 200
 - 24 Allen & Hanburys, London.**—Pâté de jujube and analogous articles. 200
 - 25 Gerrard, Alfred William, London.**—Pharmaceutical preparations. 200
 - 26 Kinmond & Co., Leamington.**—Fluid magnesia, and effervescent fluid citrate of magnesia. 200
 - 27 Wyndham, F., & Co., London.**—“Esprit des Œufs” (spirit of eggs), a medicinal compound. (*In Agricultural Hall.*) 200
 - 28 Price's Patent Candle Co. (limited), Belmont Works, London.**—Candles, night-lights, glycerine, fatty acids, machinery oils; toilet, household, and mill soaps, glycerine, paraffine, stearine, and tapers. 201
 - 29 Field, J. C., & J., London.**—Candles, toilet soaps, beeswax, and refined yellow wax, white wax, dyers' soaps, sealing wax, and fancy ornamental candles. 201
 - 30 Pears, A., & F., Lanadron Soap Works, Isleworth, near London.**—Transparent soap. 201
 - 31 Morrison, Robt. D., Norwich, Norfolk.**—Soap powder. 201
 - 32 Cohn, Sigismund, London.**—Chemical and medical soaps. 201
 - 33 Craig & Rose, Caledonian Oil and Color Works, Edinburgh.**
 - a** Oils. 201
 - b** Paints and colors. 201

MANUFACTURES.

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- 34 Williams, Miles, Britannia Varnish Works, Wigan, Lancashire.**
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b Varnishes, varnish paints, enamels, lacquers, and specimens of work. 202
- 35 Hickisson, Mrs. M. A., London.**—Marking ink, pens, linen stretcher, and framed specimens. 202
- 36 Turner, Chas., & Son, London.**—Varnishes, fine colors, gums. 202
- 37 Adams, John, Victoria Park, Sheffield.**—Polishes for furniture, brass, and plate. 202
- 38 Lyons, William, Manchester.**—Writing and copying fluids and inks, marking ink, ink powders, paper dye tablets. 202
- 39 Bowman, Charles, London.**—Solid ink, stencil plates, stencil brushes, etc. 202
- 40 Rawlins & Son, Brook Works, Preston.**—Ultramarine and smalts, with raw materials. 202
- 41 Chambers, T. F., Hull.**—Black varnish. 202
- 42 Johnson Brothers, Hull.**—Colors, varnishes, machinery oils, and locomotive and anti-friction greases. 202
- 43 Sands Brothers, & Co., Salford Chemical Works, Manchester.**—Writing inks, aniline dyes, and blacking inks for leather work. 202
- 44 Rowney, George, & Co., London.**—Pigments, colors, varnishes, artists' materials. 202
- 45 Storer, David, & Sons, Glasgow.**—Colors, pigments, and wood stains; Venetian, Indian, and other reds; drop black, greens, and other pigment colors. 202
- 46 Cooper & Co., London.**—Writing register, and japan inks, copying and fluid ink; red, scarlet, blue, and violet inks. 202
- 47 Silicate Paint Company, Liverpool.**—Silicate paints and colors; petrifying liquid for damp walls; enameling and anti-fouling paints; cement for steam joints, anti-incrustation fluid, nitrile killer, etc. 202
- 48 Blackwood, John, & Co., London.**—Writing, copying, and indelible marking inks. 202
- 49 Mackay, John, Edinburgh.**
a Spirit varnishes and polishes for coating wood of all colors, white, mahogany, oak, or ebony. 202
b Fluid flavoring essences from spices, fruits, and vegetables. 203
- 50 Stephens, Henry Charles, London.**—Writing fluids and copying inks, ink powders, machine ruling and indorsing inks; stains for wood. 202
- 51 Crown Perfumery Company, London.**—Perfumes and toilet requisites. 203
- 52 Sturges Montserrat Company (limited), Birmingham.**—West India goods. 203
- 53 Atkinson, J., & E., London.**—Perfumery and toilet articles. 203
- 54 Jaap, John, Glasgow.**—Flavoring essences and other preparations. 203
- 55 Low, Son, & Haydon, London.**—Perfume extracts, toilet soaps. 203
- 56 Perks, Samuel, Hitchin Herts.**—Essential oil of lavender, extract lavender flowers, etc. 203
- 57 Thiellay, Eugene Henry, London.**—Hair tincture, dyes, and bleaching liquid, tonics, and cultivators. 203
- 58 Rimmel, Eugene, London.**—Perfumery and toilet articles; perfume vaporizers, etc. 203
- 59 Evans, Sons, & Co., Liverpool, and Evans, Lescher, & Evans, London.**—Perfumery. 203
- 60 Bryant & May, Fairfield Works, London.**—Safety matches, wax vestas and vesuvians, decorated metal and other boxes. 204
- 61 Eley Brothers (limited), London.**—Paper and metal cartridge cases (empty), sporting and military percussion caps, gun wadding. 204
- 62 Bickford, Smith, & Co., Tuckington, Cornwall.**—Safety fuses for blasting operations. 204
- 63 Pigou, Wilks, & Laurence (limited), London.**—Military, sporting, African, and mining powders of every description. 204
- 64 Lacey, Richard George, Coast Guard Station, Leigh, Essex.**—Rocket apparatus for throwing lines from one ship to another; alarm signal box for ships; fisherman's block. 204
- 65 Gage, Thomas, London.**—Rockets, and tube for firing; danger signal and distance plate; rockets and hand lights, fired without the aid of heat, light, or fire; friction tubes and reflectors; fog signals for railways. 205
- Ceramics—Pottery, Porcelain, Glass, etc.**
- 66 Peake, Thomas, The Tilers, Tunstall, Staffordshire.**—Paving and facing bricks; ridge, roofing, and flooring tiles; ornamental tiles for garden borders, skirtings, and mural decorations. 206
- 67 Hamblet, Joseph, Piercy Blue Brick Works, West Bromwich, Staffordshire.**—Vitrified blue bricks, copings, plinths, stable floor bricks, quarries, ridges, roofing tiles, and every variety of terra metallic pavings. 206
- 68 Wood & Ivory, Albion Brick Works, West Bromwich, Staffordshire.**—Blue terra metallic building and fancy bricks; mouldings, copings, footpath paving bricks, grooved stable floor bricks, terminals; terra metallic vases, trusses, etc. 206
- 69 Johnson & Co., Ditchling Potteries, Sussex.**—Terra cotta as applied to building purposes; terminals, vases, ridge tiles, and general terra cotta work. 206
- 70 Matthews, John, Royal Pottery, Weston-super-Mare, Somerset.**—Terra cotta vases, fountains, and baskets; garden pottery, etc. 206
- 71 Watcombe Terra Cotta Company (limited), Watcombe, South Devon.**—Terra cotta, painted vases and plaques, statuettes, etc.; frescoes for mural adornment, and architectural terra cotta specimens. 206
- 72 Brooke, Edward, & Sons, Fieldhouse Fire Clay Works, Huddersfield, Yorkshire.**
a Sanitary tubes. 206
b Fire bricks and clay for furnaces; sewer ventilators; silica fire bricks for furnaces. 207

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- 73** Stiff, James, & Sons, London.—
a Terra cotta jars, bottles, tiles, vases, medallions, water filters, refrigerators, air bricks, stoves, and stove linings, tablets with figures in bas-relief, figures for church and other decorations, etc. 206
b Stoneware jugs, etc., in decorated Lambeth ware, chemical apparatus, sanitary ware, sewer traps, drain pipes, etc. 210
- 74** Jennings, George, London.—Appliances for ventilation, terra cotta bricks, etc.; stoneware drain pipes, gulley traps. 206
- 75** Holland, William Thomas, Yrisymudw, South Wales.—Ceramic goods, earthenware or faience, in table, tea, toilet services, etc.; architectural terra cotta, ornamental bricks and tiles, fire bricks and fireproof cements, sanitary pipes and ware. 206
- 76** Lindsay & Anderson, Lilliehill Fire Clay and Terra Cotta Works, Dunfermline, Scotland.—Fountain in terra cotta, bust and pedestal of Sir Walter Scott, statuette of Sir James Y. Simpson, nymphs at fountain, garden vases and pedestals, gas stove in terra cotta, sewage pipes and sanitary appliances, fire clay bricks, chimney cans, collection of terra cotta. 206
- 77** Doulton, Hy., & Co., London.—Terra cotta goods for architectural and horticultural purposes; sanitary pottery in salt-glazed stoneware, queensware; colossal group of America, by John Bell, on pedestal, ornamented with art pottery; vitrified metallic bricks and pavings. 206
- 78** Brownhills Pottery Co., Tunstall.—Earthenware, dinner, dessert, and toilet ware, jugs, etc.; enameled vases, etc.; terra cotta and black glazed ware, floor and roof tiles, ridge ornaments, etc. 206
- 79** Dean, Henry, Rugby, Warwickshire.—Stoneware drain traps and yard gullies of different patterns. 206
- 80** Tinworth, George, London.—Panels in terra cotta, illustrative of Scripture, and articles in colored stoneware. 206
- 81** Harper & Moores, Stourbridge.—Fire clays, prepared clays, fire bricks, crucibles, melting pots, bricks for smelting furnaces, etc. 207
- 82** Cliff, John, Runcorn, near Liverpool.—Fire brick. 207
- 83** Patent Plumbago Crucible Co., Battersea Works, London.—Portable furnaces, dental work, etc.; skittle pots for glass melting; crucibles for jewelers, assayers, dentists, etc.; founders' blacking. 208
- 84** Price, J., & C., & Brothers, Bristol.—Ale bottles, spirit jars, barrels, preserve jars, water filters, feet warmers, etc.; stoneware. 207
- 85** Bates, Walker, & Co., Dale Hall Works, Burslem.—Dinner, dessert, toilet, and tea ware; general earthenware goods; ironmongers', artists', and gardenware; stick, parasol, and umbrella handles; spirit barrels, signboard letters, porcelain slates, menu tablets, etc. 207
- 86** Doulton & Co., London.—Mantel-pieces, stoves, hearth, and fenders of clay; crucibles, furnaces, muffles, in fire clay and plumbago. 207
- 87** King Brothers, Stourbridge.—Fire brick, gas retorts, etc. 208
- 88** Reynolds, John George, London.—Pipe clays and pipes, terra cotta and fire clays; gas stoves in terra cotta, backs and cheeks for close stoves, fuel economizers, gas shades, fire bricks, water paint. 207
- 89** Davidson, T., Jr., & Co., Caledonian Pipe Works, Glasgow.—Clay, tobacco pipes; white clay pipes, fitted with fancy mouthpieces and cases. 207
- 90** The Campbell Brick and Tile Co., Stoke-upon-Trent.—Encaustic, geometric, majolica, and all kinds of glazed tiles and mosaics, bricks, and roofings. 208
- 91** Craven, Dunill, & Co., Jackfield Works, near Ironbridge, Shropshire.—Tiles for pavements and hearths; ornamental splays for fireplaces; tiles for walls and furniture. 208
- 92** Minton's China Works, Stoke-on-Trent.—Enamelled tiles. 208
- 93** Maw & Co., Benthall Works, Broseley, Shropshire.—Geometrical mosaic, encaustic, and majolica tiles, architectural majolica and terra cotta. 208
- 94** Minton, Hollins, & Co., Stoke-on-Trent.—Tiles, tile-mosaic, tile fender, chimney piece, fire grate, flower vases, etc. 208
- 95** Stanley Bros., Midland Tile Works, Nuneaton, Warwickshire.—Perforated tiles for malt kiln floors. 208
- 96** Brown-Westhead, T. C., Moore, & Co., Cauldon Place, Staffordshire Potteries.—China, earthenware, statuary porcelain and majolica ware; dinner, dessert, tea, and toilet services; druggists' and perfumers' goods, tiles, and sanitary ware. 208
- 97** Daniell, A. B., & Son, London.—Porcelain and pottery, ornamental vases, candelabra, etc.; dinner, dessert, tea, and coffee services; toilette services, fountains, jardinieres, garden seats, vases, etc. 210
- 98** Powell & Bishop, Hanley, Staffordshire.—Dinner, dessert, tea, and toilet services, white granite, etc. 210
- 99** Brownfield, Wm., & Son, Cobridge, Staffordshire Potteries.—China, majolica, ironstone china, parian, earthenware, stoneware, etc. 210
- 100** Doulton & Watts, Lambeth Pottery, London.—Tile decorations, stoneware for domestic and manufacturing purposes, and chemical works; pulpit and font, in fine art pottery faience. 210
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- 102** Edwards, John, Fenton, Staffordshire.—Ironstone china and porcelaine de terre tea, dinner, toilet, and jug services. 213
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- 105** Chance Bros., & Co., Glass Works, near Birmingham.—Glass for optical instruments. 214
- 106** Kilner Bros., London.—Glass bottles and glass for useful and scientific applications. 215

MANUFACTURES.

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- 108 Green, James, & Nephew, Thames Cut Glass Works, London.**—Table glass, cut and engraved table decorations and flower stands, glass chandeliers, and lustre candlesticks. 216
- 109 Millar, John, & Co., Edinburgh.**—Engraved and cut glass. 216
- Furniture and Objects of General Use in Construction and in Dwellings.**
- 110 Cox & Sons, London.**—Chimney piece, embroidered mantel board, ebonized corner cupboard, carved oak furniture, bronze ornament, stained glass church window, wrought iron pupit body, lecterns, church plate, wrought iron and brass work, art tiles and plaques; the challenge prize of the National Musical Union, etc. 217
- 111 Wright & Mansfield, London.**—Cabinet furniture of the 18th century. 217
- 112 Hems, Harry, Exeter.**—Alabaster statue; carved oak chest made out of ancient beams (nearly 600 years old) from the choir of Salisbury cathedral. 217
- 113 Peyton & Peyton, Bordesley Works, Birmingham.**—Metallic bedsteads. 217
- 114 Morton, W. Scott, & Co., Art Furniture Works, Edinburgh.**—Decorative furniture, ebonized and decorated cabinet, sideboard. 217
- 115 Hart, Son, Pearn, & Co., London.**—Artistic metal work (chiefly for ecclesiastical purposes), gas fixtures, stove-grates, etc. 217
- 116 Shoolbred, James, & Co., London.**—Furniture in the Jacobean and Queen Anne styles; bedroom furniture in the Anglo-Indian style; curtains and carpets. 217
- 117 Barnard, Bradley, London.**—Furniture and hammock, bassinettes, baskets, etc. 217
- 118 Cooper & Holt, London.**—Furniture, sideboard, portion of bedroom suite, decorative drawing-room furniture. 217
- 119 Phipson, Miss Emma, Monk Sherborne, Basingstoke, Hants.**—Sideboard, ladies' work table, dressing glass, and candlesticks. 217
- 120 Ward & Co., London.**—Bear arranged as dumb waiter to hold tray and lamp. 217
- 121 Schildberg, H., & Co., London.**—Writing desks, ornamental fountains. 217
- 122 Arthur, Frederick, London.**—Cabinet work and fittings for Royal School of Art needlework exhibits. 217
- 123 Wethered, Edwin Robert, Woolwich, Kent.**—Hammock, friction pulley block exhibited as a fire escape. 217
- 124 Matthew, Edward, London.**—Stained glass windows, mural brasses, decorative tiles. 217
- 125 Barnard, Bishop, & Barnards, Norfolk Iron Works, Norwich.**—Ornamental wrought and cast iron gates, palisade, pavilions, etc., lawn mowers, wire netting, hose reels, garden rollers, iron garden requisites, stoves, mangles, etc. 217
- 126 Singer, J. W., & Son, Frome, Somerset.**—Artistic metal work, altar crosses and candlesticks, alms dishes, and mural brass plates for churches. 217
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- 128 Jeffreys, Charles, London.**—Show cases, cut glass mirror, leather traveling and jewel cases, bronzed shop fittings, show stands, reflecting lamps, morocco and velvet cases. 217
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- 130 Elkington & Co., London.**—Works of art in gold, silver, and other metals; solid silver and electro-silver plate for domestic use; decorative table plate relieved with electro-gold and oxidized silver; antique art treasures in metal from the South Kensington Museum; Cloisonné and Champlevé enamels on silver and copper; bronze statuary. 217
- 131 Collinson & Lock, London.**—Furniture, wall papers, and textile fabrics in the old English style. 217
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- 134 MacIntosh, James, London.**—Decorative doors and panels; imitations of woods and marbles, decorative designs and paperhanging. 219
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- 141 Gardner, John, & Sons, London.**—Lamps, Arctic expedition lamps, traveling canteens. 222
- 142 Clough, Samuel Wesley, Stanney, near Leeds.**—Yorkshire grates, with ovens for baking or roasting; kitchen grate, room grate specially adapted for railway companies' offices, waiting rooms, etc. 222
- 143 Gregory, James, Lincoln.**—Cooking apparatus, lime trough, plunger, mortar temperer, fire escapes, screw hoist, and continuous screw. 222
- 144 Steel & Garland, Wharncliffe Works, Sheffield.**—Steel grates, with porcelain tiles; fenders, encaustic tile hearths, stoves with china tiles, fire irons, etc. 222
- 145 Smart, Walter, Buckhurst Hill, Essex.**—Sub-fire oven. 222

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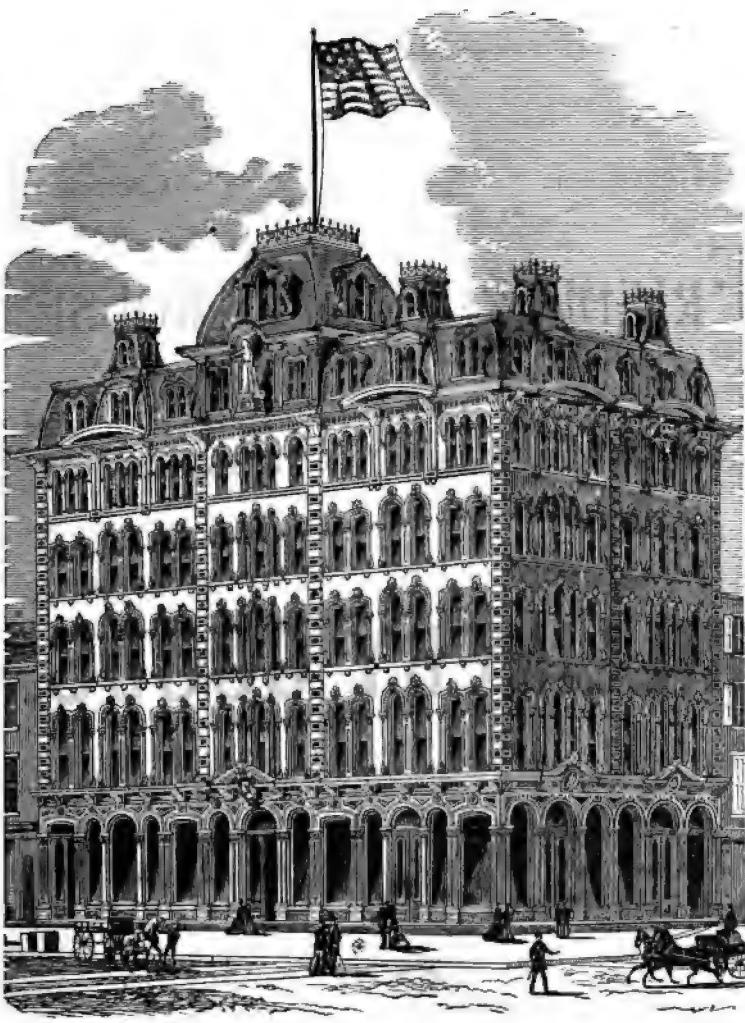
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Heating and Lighting Apparatus, Woven Wire, Woolen, Cotton, Linen.

- 146** Feetham, Mark, & Co., London.—Stoves and grates with appliances ; decorated china for fireplaces. 222

147 Perkins, A. M., & Son, London.—Steam oven for marine use. (*In Machinery Hall.*) 222

148 Thornton, Ebenezer, Bradford, Yorkshire.—Cooking stove for gas or solid fuel. 222

149 Kington, Thomas, London.—Water waste preventer, gas regulator, pneumatic sound communicator. 223

150 Field, J. C., & J., London.—Night lights and candle guard. 223

151 Partridge & Co., Birmingham.—Brass gaseliers, brackets, etc. 223

152 Skelton & Co., London.—Street lamp, with reflectors. 223

153 Busse, G., & Co., London.—Water filters and cement. 224

154 Pullinger, Colin, Selsey, near Chichester, Sussex.—Sifter, cask stand, tapping mallet, sulphur blower, mouse traps, eel spear, mortising chisels, planes, bradawl, and brace. 224

155 Jennings, George, London.—Lavatories, baths, closets, urinals, and latrines ; water meters and water waste preventors. 224

156 Bullivant, Thomas, London.—Sash window. 224

157 Edwards, G., London.—Sliding window sashes and frame. 225

Yarns and Woven Goods of Vegetable or Mineral Materials.

158 Brown, J. B., & Co., London.—Galvanized wire netting for inclosing poultry, pheasants, and dogs, etc. 228

159 Greening, N., & Sons, Warrington.—Woven wire. 228

160 Cox Brothers, Camperdown Linen Works, Dundee, Scotland.—Jute yarns, twines, etc. 229

161 Sandeman, Frank Stewart, Manhattan Works, Dundee, Scotland.—Linen and jute yarns, carpet yarns, burlaps, baggings, canvas paddings, scrim cloth, horse covers, and lap robes. 229

162 Laird, William, & Co., Canmore Linen Works, Forfar, Scotland.—Textile fabrics, dices, washed damasks, fancy toweling, horsecloths, sheetings, osnaburgs, stair covering, seamless bags, hessians, striped beddings, paddings, ducks, buckram, etc. 229

163 Johnson, Jabez, & Filides, Manchester.—Quilts and bedcovers, toilet or bureau covers, brocades, damasks, dimities, muslins, and printed cretons, towels, dress fabrics, etc. 230

164 Dewhurst, John, & Sons, Belle Vue Mills, Skipton, Yorkshire.—Sewing cotton finished and in various stages of manufacture. 230

165 Brook, Jonas, & Bros., Meltham Mills, Huddersfield.—Spool cotton, white and colored ; crochet and embroidery cotton. 230

166 Neilson, Storer, & Sons, Thorn Mills, Johnstone, near Paisley.—Yarns ; knitting, mending, and other cottons ; yarns for lace, curtain, and fancy dress manufacturers. 230

167 Ferguson Brothers, Holme Head Works, near Carlisle.—Satins. 230

168 Clark, John, Jr., & Co., Glasgow, Scotland.—Spool cotton. 230

169 Swainson, Birley, & Co., Fishwick Mills, Preston.—Bleached cotton fabrics. 230

170 Barlow & Jones (limited), Manchester.—Toilet quilts, covers, and mats ; cloakings, cotton towels, blankets, alhambras, and counterpanes, plain and fancy muslins, etc. 230

171 Ashworth, Edmund, & Sons, Egerton Mills, Bolton, Lancashire.—Cotton in various stages of manufacture ; yarns, sewing cottons, crochet, embroidery, knitting, mending, and glove cottons, linen finish thread. 230

172 Pearson, Thomas, & Son, Victoria Mills, Little Bolton.—Quilts, quiltings, toilet covers, and mats. 230

173 Hawkins, John, & Sons, Manchester.—Plain and twilled calicoes and prints. 230

174 Wild, John, Greenfield Mills, Shaw, near Oldham.—Cotton plush velvet-eeen. 231

175 Schwabe, Salia, & Co., Manchester.—Cotton prints for garments, chintzes, and furniture. 232

176 Simpson & King, Manchester.—Printed cotton furniture fabrics. 232

177 Marshall & Co., Leeds.—Linen sewing threads. 232

178 McBride, Robert, & Co., Belfast.—Cotton and mixed cotton and linen goods. 233

179 Normand, James, & Sons, Dysart, Fifeshire, Scotland.—Linens for house-keeping, shoe linings, etc. 233

180 Ewart, William, & Sons, Belfast, Ireland.—Linen fabrics. 233

181 The York Street Flax Spinning Company (limited), Belfast.—Linen piece goods, drills, ducks, sheetings, shirtings, and frontings. 233

182 Matier, Henry, & Co., Belfast.—Bleached and printed linens ; handkerchiefs, plain, hemstitched, printed, and embroidered. 233

183 Ainsworth, Thomas, Cleator Mills, Cleator, Cumberland.—Linen threads and towels. 233

184 The Greenmount Spinning Company, Greenmount Factory, Dublin.—Linen and cotton goods for domestic and clothing purposes. 233

185 Ullathorne & Co., London.—Shoe and saddlers' threads, heel balls, and shoe findings. 233

186 Fenton, Connor, & Co., Linen Hall, Belfast.—White linens, cambric, table linens, linen ducks, drills, etc. ; printed shirtings and lawn dress goods. 233

187 Brown, John S., & Sons, Belfast.—Table linen, diapers, sheetings, shirting linen, lawns, linen and cambric handkerchiefs, and yarns. 233

188 Richardson, J. N., Sons, & Owden, Belfast.—Linen goods. 233

189 Dicksons, Furguson, & Co., Belfast.—Linens bleached and unbleached. 233

MANUFACTURES.

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- 192 Laird, Michael, & Co., Kirkaldy,** Scotland.—Floor oil cloths. 234
- 193 Tull, Gianvill, & Co., Crown Works,** London.—Floor coverings. 234
- 194 Corticine Patent Floor Covering Company, London.**—Floor covering. 234
- 195 Hall, Thomas, Edinburgh.**—Hand painted cloths in imitation of tapestry, for wall decoration. 234
- 196 Wellcock, J., & Co., Bradford, Yorkshire.**—Waterproof materials for cart and wagon covers. 234
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- 199 Hooper, Charles, & Co., Eastington Mills,** Stonehouse, Gloucestershire.—Woolens, broadcloths, military cloths, doeskins, beavers, elysians, kerseys, meltons, coatings, and trowserings. 235
- 200 Salter, Samuel, & Co., Home Mills,** Trowbridge, Wiltshire.—Trowserings and coatings. 235
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- 202 Anderson, David, & Son, Lagan Felt Works, Belfast, Ireland.**—Roofing, flooring, and ship sheathing felt, lining felt, hair felt for covering boilers and steam pipes. (*In Machinery Hall.*) 235
- 203 Bliss, William, & Son, Chipping Norton, Oxon.**—Tweeds, woolen serges, and shawls; mauds and rugs; saddlers' woolens. 235
- 204 Brigg, J. F., & Co., Huddersfield, Yorkshire.**—Beavers, coatings, cheviot, cassimeres, carriage and livery cloths, drills, ducks, doeskins, elysians, meltons, kerseys, pilots, rugs, vestings and quiltings, velvets, union cloths, witneys, and reversible coatings. 235
- 205 Carr, Isaac, & Co., Twerton Mills, Bath.**—Woolen cloths, meltons, twills, beavers. 235
- 206 Bubb & Co., Southfields Mills, near Stroud.**—Woolen cloths; billiards, government, and piano cloths. 235
- 207 Marling & Co., Ebley and Stanley Mills, Stroud, Gloucestershire.**—Raw, scoured, and dyed wool; woolen cloths, beavers, Venetians, doeskins, deerskins, cassimeres, etc. 235
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- 211 Hargreave & Nusseys, Farnley Low Mills, Leeds.**—Coatings, overcoatings, kerseys, meltons, woolen cloths. 235
- 212 Engert & Rolfe, London.**—Felts for roofing, fibrous asphalt, etc. 235
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- 234 Milner, Wm., & Sons, Leek, Staffordshire.**—Sewing silks. 243

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- 250 McLintock, James, & Sons, Barnsley, Yorkshire.—Down quilts, skirts, pillows, jackets, and dressing gowns; dress improvers, slippers, etc.** 250
- 251 Welch, Margetson, & Co., London.—Scarfs and ties, silk handkerchiefs, linen collars, shirtings, umbrellas, rugs, etc.** 250
- 252 Sykes, Josephine, & Co., London.—Corsets and ladies' belts.** 250
- 253 Hitchcock, Williams, & Co., London.—Costumes of mixed fabrics.** 250
- 254 McGee, John G., & Co., Belfast, Ireland.—Ulster overcoats and Irish home-spun goods; traveling wraps, shawls, and rugs.** 250
- 255 Smyth & Co., Balbriggan, Ireland.—Balbriggan hosiery, lace hose, light stockings.** 250
- 256 Roe, William Allen, Leicester.—Boots and shoes.** 251
- 257 Lobb, John, London.—Gentlemen's and ladies' boots.** 251
- 258 Dash, Osmond, Brighton.—Hats, caps, and umbrellas.** 251
- 259 Baxter, Richard, Thirsk, Yorkshire.—Boots; wooden clump boots.** 251
- 260 Lincoln, Bennett, & Co., London.—Hats.** 251
- 261 Humbert, Hermann, London.—Hats and bonnets; hat and bonnet shapes.** 251
- 262 Daggett, Christopher, Woodstock, Oxfordshire.—Gloves.** 251
- 263 Debenham & Freebody, London.—Gloves.** 251
- 264 Tress & Co., London.—Hats; pith and felt solar hats and helmets.** 251
- 265 Smith, George John, London.—Irish lace made by the Industrial Poor.** 252
- 266 Dunraven, the Countess of, Adare, County Limerick, Ireland.—Embroidery on lawn; robes, pocket handkerchiefs, insertion for dresses, pincushion cover, etc.** 252
- 267 Goggin, Jeremiah, Dublin.—Jewelry; table ornaments, mirrors, time-pieces, reading stands, walking canes, pipes, drinking cups, tankards, etc.** 253
- 268 Bryan, Charles, West Cliff, Whitby.—Jet, rough and in ornaments of various descriptions.** 253
- 269 Francati & Santamaria, London.—Jet ornaments, brooches, earrings, bracelets, necklaces, etc.; jet cameo mosaics, carved by Roman cameo cutters.** 253
- 270 Jefferys, John, London.—Sleeve links, studs, solitaires, scarf rings, etc.** 253
- 271 Neal, John, London.—Gold and silver jewelry; precious stones, table ware, cutlery, gold and silver watches, chronometers, and timekeepers.** 253
- 272 Aitchison, James, Edinburgh.—Scottish jewelry in gold and silver; Highland ornaments and stones found in Scotland.** 253
- 273 Gibson, William, Belfast.—Watches; gold, diamond, and Irish bog oak jewelry; walking sticks and table ornaments.** 253
- 274 English, John, & Co., Feckenham, Worcestershire.—Needles; fishhooks; steel pins; hairpins; bodkins.** 254
- 275 Johnson, J., & Co., Charterhouse Works, Sycamore street, London.—Shell boxes, toy furniture and ornaments, and fancy paper boxes.** 254
- 276 Davis & Wilson, Birmingham.—Whip, walking stick, and umbrella mountings; African chief's canes; whips and general whip materials.** 254
- 277 Millward, Henry, & Sons, Redditch.—Needles, sewing machine needles, fishhooks.** 254
- 278 Turner, R., & Co., Old Factory, Redditch.—Needles, pins, fishhooks, etc., displayed in a glass case, forming model of the exhibition of 1851.** 254
- 279 Swaine & Adeney, London.—Whips, whip lashes, thongs, and sockets; horns, canes, and walking sticks; sporting apparatus.** 254
- 280 Smith, John Wright, Leicester.—Self-acting needles used in hosiery frames.** 254
- 281 Van Vollen, Garret, London.—Human hair; tools used in preparation and manufacture.** 254

MANUFACTURES.

Needles, Pins, Traveling Equipments, Stationery, Weapons.

- 282 Evans, David, Studley, Redditch.**—Needles for hand and machine sewing. 254
- 283 Fenton, James, Birmingham.**—Pearl buttons. 254
- 284 Kirby, Beard, & Co., Birmingham.**—Pins, needles, hairpins, fishhooks, etc. 254
- 285 Sangster & Co., London.**—Umbrellas, parasols, sunshades, whips, canes. 254
- 286 Smith, James, & Son, Astwood Bank, near Redditch.**—Needles, showing stages of manufacture; bodkins, hairpins, and fancy cases for holding needles. 254
- 287 Hayes, Crossley, & Co., London.**—New shape sewing needles, machine needles, pins, bodkins, and specimens in various stages of preparation. 254
- 288 Cooke Brothers, Birmingham.**—Safety pins, curtain hooks, and fancy nails. 254
- 289 Woodfield, William, & Sons, Easemore Works, Redditch.**—Needles, sewing machine needles, fishhooks, etc.; sail tools and fancy needle cases. 254
- 290 Martin, William Henry, London.**—Umbrellas, walking sticks, whips. 254
- 291 Nicholson, Hamlet, Rochdale.**—Crickets and playing balls. 254
- 292 Tayler, D. F., & Co., New Hall Works, Birmingham.**—Solid-headed toilet pins, hairpins, hooks and eyes, pearl buttons; iron, steel, brass and copper wire. 254
- 293 Heath, William, Neveux Works, Redditch.**—Sewing machine needles. 254
- 294 Turner, George, & Co., London.**—Military and traveling equipments, hammock valise, bedstead and sofa, mosquito curtains, tent, camp oven and canteen, ambulances, appliances for picketing horses, screw anchor peg. 255
- 295 Hoe, Richard, & Sons, London.**—Leather portmanteaus, hat cases, and bags. 255
- 296 Harrington, J., & Co., London.**—Imitation leather hat linings, shoes and shoe linings, wall decorations, pocket-books, belts, dispatch boxes, dressing and jewel cases, glove and handkerchief boxes, etc. 255
- 297 Bussey, Geo. G., & Co., London.**—Chili leather portmanteaus, trunks, traveling bags, and leather and waterproof goods used for shooting and traveling purposes; breechloading guns and their accessories; gyro pigeon. 255
- Paper, Blank Books, and Stationery.**
- 298 Webster, Henry, London.**—Portable inkstand, writing cases, etc. 258
- 299 Hincks, Wells, & Co., Buckingham Steel Pen Works, Birmingham.**—Steel pens, penholders. 258
- 300 Stevens, Henry Charles, London.**—Inkstands, gum mucilage, quills, sealing wax, parallel rulers. 258
- 301 Ortner & Houle, London.**—Seal engraving, steel and copper plate heraldic engraving, and die sinking. 258
- 302 Ward, Marcus, & Co., London.**—Writing papers and envelopes, illustrated books, chromo prints, maps and atlases, cards, valentines, photograph albums, scrap books, educational works, copy books, fancy leather work, diaries, calendars, etc. 258
- 303 Blackwood, John, & Co., London.**—Sealing and bottle wax. 258
- 304 Lyons, William, Manchester.**—Sealing wax, gum mucilage. 258
- 305 Waterston, George, & Son, Edinburgh.**—Sealing wax. 258
- 306 Ford Works Co., Ford, Durham.**—Paper stock, manufactured from esparto grass; products from esparto, bamboo, megasse, phormium tenax, maize, and other fibres. 259
- 307 Dudgeon, Arthur, London.**—Writing papers. 259
- 308 Pirie, Alexander, & Sons, London.**—Writing papers, cardboard, and enamelled papers. 259
- 309 Dudgeon, Arthur, London.**—Paper pulp, manufactured from peat. 259
- 310 Fletcher, Robert, & Son, Kersley Paper Works, Stoneclough.**—White and colored papers, fine tissues, silver tissues, copying and cigarette papers. 259
- 311 Birdsall & Son, Northampton.**—Binding of the Hexaglot Bible. 261
- 312 Goodall, Charles, & Son, Camden Works, London.**—Playing and Christmas cards. 262
- 313 Rimmel, Eugene, London.**—Valentines and fancy crackers. 262
- 314 Jeffrey & Co., London.**—Artistic wallpaper decorations. 264
- Military and Naval Armaments, Ordnance, Firearms, and Apparatus of Hunting and Fishing.**
- 315 Reilly, E. M., & Co., London.**—Breechloading guns and express rifles. 265
- 316 Greener, William Wellington, Birmingham.**—Sporting guns and rifles; breechloading guns. 265
- 317 Rigby, John, & Co., Dublin.**—Guns and rifles and their accessories. 265
- 318 Henry, Alexander, Edinburgh.**—Breechloading express rifles, fowling-pieces, harpoon and bomb-lance guns; military arms and target rifles. 265
- 319 Clay, Randolph, London.**—A converter for breechloading firearms; flexible gas tubing; an instrument for tracing ellipses and other curves; portable invalid bed tray; model of a deck seat with life-raft and of a boat distinguishing hook. 265
- 320 Dougall, James Dalziel, Glasgow.**—Long-range shotguns and rifles. 265
- 321 Copeland, George Alexander, Camborne, Cornwall.**—Safety blasting cartridges. 265
- 322 Lancaster, Charles, London.**—Guns, rifles, cannon; drawings and models of the oval bored. 265
- 323 Scott, W., & Sons, Premier Gun Works, Birmingham.**—Sporting firearms, revolvers, gun materials. 265
- 324 Needham, J., & G. H., London.**—Breechloading double guns. 265
- 325 Purdey, Jas., London.**—Guns, rifles, etc. 265
- 326 Lancaster, Alfred, London.**—Sporting guns and rifles. 265
- 327 Soper, William, Reading.**—Rifles. 265

Weapons, Medical and Surgical Appliances, Hardware, Cutlery.

- 328 Lang, J., & Sons, London.—Guns and rifles.** 265
- 329 Webley, P., & Son, Birmingham.—Sporting breechloading guns, rifles, and revolvers.** 265
- 330 Needham, John, Sheffield.—Cutlery; daggers, table and dessert knives and forks; fish eaters.** 268
- 331 Brookes & Crookes, Atlantic Works, Sheffield.—Pen, pocket, sportsman's, bowie, and table knives; scissors, razors, and dressing case instruments.** 268
- 332 Marrison, Robert D., Norwich.—Breechloading guns and apparatus for filling cartridges; registered flyer for shooting practice.** 269
- 333 Buchanan, James, Glasgow.—Sea fishhooks.** 269
- 334 Ryder, William Henry, Birmingham.—Fishing tackle; taps for drawing effervescent wines or aerated waters.** 270
- 335 Green, E. C., Cheltenham.—Sporting guns, with their appurtenances; cleaning rods, with attachments; cartridge-loading implements, nipple keys, gun cases and bags.** 269
- 336 Tolley, J., & W., Pioneer Works, Birmingham.—Sporting breechloading shot guns, implements, cartridge cases, lubricators, bullets, and primers for reloading cartridges.** 269
- 337 Williams & Powell, Liverpool.—Breechloading guns.** 269
- Medicine, Surgery, and Prothesis.**
- 338 Allen & Hanburys, London.—Cod-liver oil; gelatine impregnated with atropine and calabar bean, for application to the eye.** 272
- 339 Gerrard, Alfred William, London.—Mustard plasters.** 272
- 340 Evans, Sons, & Co., Liverpool, and Evans, Lescher, & Evans, London.—Vegetable, animal, and mineral drugs; pharmaceutical products and accessories.** 272
- 341 Usher, Rufus, Bodicote, Oxon.—Medicinal rhubarb; extract of henbane and dried henbane leaves; photographs of henbane plants.** 272
- 342 Mackay, John, Edinburgh.—Articles of diet for invalid and table use.** 273
- 343 Mellin, Gustav, London.—A non-farinaceous food for infants and invalids.** 273
- 344 Goodall, Backhouse, & Co., Leeds.—Food for infants and invalids.** 273
- 345 Lynch & Co., London.—Druggists' sundries and surgical instruments; spinal apparatus, chest protectors, feeding bottles, spray producers, poison bottles, etc.** 276
- 346 Hicks, James Joseph, London.—Meteorological and scientific instruments.** 276
- 347 Mayer & Meltzer, London.—Surgical instruments and galvanic batteries; cutlery.** 276
- 348 Lee, Robert James, London.—Steam draft inhaler and disinfecter.** 276
- 349 Lang, Jonas, & Jules, London.—Gum elastic and india rubber surgical instruments, elastic stockings, medical glass bottles, glass tubes, etc.** 276
- 350 Pulyermacher, Isaac Louis, London.—Electrical instruments for medical purposes.** 276
- 351 Rein, Mrs. F. C., London.—Anatomical belts, elastic stockings, etc.; trusses, bandages, etc.** 276
- 352 Rein, Frederick Charles, & Son, London.—Acoustic, surgical, and veterinary instruments; magneto-electric machines; speaking tubes and trumpets; acoustical contrivances for churches and public buildings, etc.; anti-acoustic protector.** 276
- 353 Liverpool Spun Oakum Company, Liverpool.—Oakum, stypium; pure antiseptic dressing for hospital use.** 276
- 354 Patrick, Hugh William, & Son.** —Porcelain enameled artificial palates; porcelain dentures. 277
- Hardware, Edge Tools, Cutlery, and Metallic Products.**
- 355 Ward & Payne, Sheffield.—Tools for carpenters, joiners, coachmakers, shipwrights, millwrights, masons, bricklayers, tanners, curriers, engravers, diesinkers, plasterers; wood, stone, and metal carvers and turners, etc.; also sheep shears and steel.** 280
- 356 Hawksworth, Ellison, & Co., Carlisle Works, Sheffield.—Steel, and articles made therefrom.** 280
- 357 Baker, William, London.—Awls, bodkins, needles for saddlers, packers, and upholsterers; screwdrivers.** 280
- 358 Addis, J. B., & Sons, Arctic Works, Sheffield.—Tools for carving stone and wood; turning tools for iron, brass, ivory, hard wood, etc.; carpenters' tools.** 280
- 359 Kingsbury, Thomas, London.—Razors, knives, scissors, and dressing-case instruments, with specimens of manufacture.** 281
- 360 Neal, John, & Co., London.—Table, dessert, and fish cutlery.** 281
- 361 The Patent Nut and Bolt Company (limited), London Works, near Birmingham.—Iron bolts, nuts, screws, rivets, and washers; fish and sole plates; fish bolts, spikes, and fang bolts.** 284
- 362 Francis, Thomas, & Co., Birmingham.—Nails.** 284
- 363 Baker, Christopher, & Sons, Birmingham.—Coffin furniture; cabinet and general brass fittings; rails, stair rods, nails, and bolts.** 284
- 364 The Phosphor Bronze Company (limited), London.—Phosphor bronze tools, locks, tubes, wire, sheet, steam fittings, parts of machinery, etc.** 284
- 365 Adams, Robert, London.—Hinges and shoes, secure fastening bolts, weather tight sill bars for French casements, etc.** 284
- 366 White, William George, London.—Steel safe and locking apparatus; bolts.** 284
- 367 Zimdars, C. E., London.—Pneumatic signal and communication apparatus; pneumatic railway signals, indicating and registering apparatus, and self-flushing water-closet.** 284
- Fabrics of Vegetable, Animal, or Mineral Materials.**
- 368 Low, Son, & Haydon, London.—Brushes.** 286

Brushes, Vehicles, Harness, etc.

- 369 Kent, George Barton, & Co., London.**—Brushes, ivory paper knives, photographic stands, and shoe lifts; ivoride brushes and mirrors. 286
- 370 Culmer, W., & Sons, London.**—Brushes used in decorative art. 286
- 371 Bevis, Henry, London.**—Silk banner with emblematic designs. 288
- 372 Elrick, Charles Gray, Aberdeen, Scotland.**—Dressing combs; real and imitation shell, side braid, and high Spanish combs, etc. 289
- Carriages, Vehicles, and Accessories.**
- 373 Windover, Charles Sandford, London.**—Brougham, canoe, landau, Victoria, Parisian, and Stanhope phaeton. 292
- 374 Mulliner, H., & Co., Northampton.**—Carriages. 292
- 375 McNaught & Smith, Worcester.**—Barouche, landau, and broughams. 292
- 376 Thorn, Charles, Norwich.**—Carriages; shooting and baggage cart. 292
- 377 Roberts, John, Manchester.**—Parisian phaeton. 292
- 378 Hooper & Co., London.**—Carriages and drawings. 292
- 379 Roberts, John, & Sons, West of England Carriage Works, Bridgewater, Somerset.**—Carriages. 292
- 380 Peters, Thomas, & Sons, London.**—Carriages. 292
- 381 Thompson, Charles, London.**—Perambulator. 293
- 382 Hawkins Brothers, Hatherton Works, Walsall.**—Bits, stirrups, spurs, chains, buckles, and general saddlery iron work. 296
- 383 Hudson, Samuel, Dublin.**—Trace and shaft tug safety buckles; safety stirrup. 296
- 384 Martin, Robert, Old Charlton, Kent.**—Horse clipping machines; circular cutters for cutting the teeth of the above machines. (*In Machinery Hall.*) 296
- 385 Pollock, Sydney, London.**—Apparatus for checking runaway and unmanageable horses. 296
- 386 Fetherston, John J., Dublin.**—Historic portraits, miniatures, and enamels, unique and original, reproduced in personal ornaments from antique designs; armors, costumes. 257
- 387 Goodall, Chas., & Son, London.**—Card printing. 424
- 388 Cohn, Sigismund, London.**—Bearings requiring no lubricant. 573
- 389 Parkinson Brothers, Burnley.**—Spiced pickling vinegar. 660
- 390 Universal Charcoal and Sewage Company (limited), Manchester.**—Charcoals and charcoal manure, illustrating the utilization of town's refuse. 681

NEW SOUTH WALES.

(North of Nave, Columns 10 to 17.)

Chemicals, Ceramics, Furniture, Woven Goods.

- Chemical Manufactures.**
- 1 Read, R. B., Randwick.**—Extract, leaves, and berries of Smilacis glycyphylia, or Australian sarsaparilla. 200
- 2 Barrett & Co., Sydney.**—Aerated waters and cordials. 200
- 3 Gilroy & Hurst, Sydney.**—Baking, custard, egg, and butter powders. 200
- 4 Hunt, A. M., & Co., Goulburn.**—Baking powders. 200
- 5 Swain & Co., Parramatta.**—Washing fluid and soap. 201
- 6 New South Wales Shale and Oil Company, Sydney.**—Kerosene oil, etc. 201
- 7 New South Wales Commissioners, Sydney.**—Stearine candles. 201
- 8 Layton, Fred., Grafton, Clarence River.**—Soap and candles. 201
- 9 Underwood, Thomas, Paddington.**—Paints and paint pigment. 202
- 10 Hoff, M. Camille, Nakutakinna, New Caledonia.**—Indigo. 202
- Ceramics, Pottery, Porcelain, Glass, etc.**
- 11 New South Wales Commissioners.**—Churns, jars, etc. 210
- Furniture, etc.**
- 12 Lyons, Cottier, & Co., Sydney.**—Stained glass staircase window, subject, "Captain Cook." 219
- 13 Hudson Brothers, Steam Joinery Mills, Sydney.**—Window sashes, outside hall door, inside four-panel door, drapery panel door, French casements, cedar table legs. 227
- Yarns and Woven Goods of Vegetable or Mineral Materials.**
- 14 Read, John Cecil, Darlinghurst, Sydney.**—Mats and matting made of cocoa fibre yarn, by aborigines of New South Wales and Frazer's Island. 229

Clothing, Animal and Vegetable Products, Vehicles, etc.

- 15 Rudder, E. W., Kempsey.**—Linen.
233
- Woven and Felted Goods of Wool, etc.**
- 16 Rudder, E. W., Kempsey.**—Woolens.
235
- 17 New South Wales Commissioners.**
a Tweeds.
235
b Shawls.
237
- 18 Jennings, P. A., Sydney.**—Rug of tanned platypus skin.
239
- 19 Layton, Fred., Grafton.**—Wallaby skin rug.
239
- Clothing, Jewelry, and Ornaments, Traveling Equipments.**
- 20 Jennings, P. A., Sydney.**—Collaret and cuffs of platypus skin.
250
- 21 Midgley, Mrs., Cook's River.**—Wool flowers, copied from Australian native flowers.
254
- 22 Layton, Fred., Grafton.**—Furs and skins of opossum, kangaroo, wallaby, and platypus.
256
- Paper, Blank Books, and Stationery.**
- 23 Government Printing Office, Sydney, New South Wales.**—Blank books.
261
- Medicine, Surgery, Prothesis.**
- 24 Spencer, John, Sydney.**—Mechanical dentistry.
277
- Fabrics of Vegetable, Animal, or Mineral Materials.**
- 25 New South Wales Commissioners, Sydney.**—Brushware.
286
- 26 New South Wales Commissioners, Sydney.**—Manilla rope, New Zealand flax rope, and lines.
287
- 27 Green, R., Sydney.**—Cradles, flower stand, chair, perambulator; cane and willow work.
289
- Carriages, Vehicles, and Accessories.**
- 28 Robertson, John.**—Concord buggy with canoe front; woodwork and ironwork entirely of New South Wales material.
294
- 29 New South Wales Commissioners.**—Lady's side saddle.
296
- 30 New South Wales Commissioners, Sydney.**—Saddlery.
296
- Agricultural Products.**
- 31 Macarthur, Sir W., assisted by Hill and Hanrahan and J. Hassell.**—Woods of southern districts.
600
- 32 Moore, Charles.**—Woods indigenous to the northern districts.
600
- 33 Shoobert, James, Sydney.**—Iron bark and turpentine timber.
600
- 34 Derepas, W., Yonnagara Station.**—Boree, and straight and curly yarran timber.
600
- 35 Hodgson, George, Redfern.**—Timber from Bellinger River.
600
- 36 Penzer, J., Bundainar, near Dubbo.**—Timber.
600
- 37 Du Faur, E., Sydney.**—Timber from Mount Victoria.
600
- 38 Hudson Bros, Botany Road, Redfern.**—Timber.
600
- 39 Derepas, R., Yonnagara.**
a Yarran gum.
603
b Quongong nuts.
605
- 40 Harling, Mrs., and H. H. Field, Sydney.**—Pressed ferns.
604
- 41 Moore, Charles, Botanic Gardens, Sydney.**—Seeds, ginger-root, and bitter bark.
605
- 42 Hemmings, F. W., Loma Loma, Fiji.**—Dried cocoanut.
605
- 43 Ryder Bros, Mango Island, Fiji.**—Dried cocoanut.
605
- Agricultural Products.**
- 44 Lovegrove, W., Terrara, Shoalhaven River.**—Maize.
620
- 45 Ryder Bros, Mango Island, Fiji.**
a Maize.
620
b Beans.
621
c Turmeric and turmeric powder.
622
- 46 Peden, M. J., Bega.**—Maize.
620
- 47 Demestre, E., Shoalhaven.**—Maize.
620
- 48 Egging, James, Grafton, Clarence River.**—Maize.
620
- 49 Blain, C. R., Grafton, Clarence River.**—Maize.
620
- 50 Macarthur, Sir W.**—Maize.
620
- 51 Lewis Bros., Tamworth.**—Wheat.
620
- 52 Dalton Bros., Orange.**—Wheat.
620
- 53 Nelson Bros., Orange.**—Wheat.
620
- 54 Jaeschke, Gustave, Clarence River.**—Cigars and tobacco leaf.
623
- 55 Schweigert, W., & Co.**—Cigars.
623
- 56 Muirhead, R., Grafton, Clarence River.**—Cigars.
623
- 57 Hoff, M. Camille, Nakutakina, New Caledonia.**—Coffee.
623
- Land Animals.**
- 58 Government Printing Office, Sydney.**
a Mammals of Australia and New South Wales.
631
b Snakes of Australia.
637
- 59 Jennings, P. A., Sydney.**—Stuffed platypus.
637
- Water Animals, Fish Culture, and Apparatus.**
- 60 Hemmings, F., & W., Loma Loma, Fiji.**—Bèche de mer.
643
- Animal and Vegetable Products.**
- 61 Secombe, R., Milton, Ulladulla.**—Preserved milk.
651
- 62 Wright, Davenport, & Co., Sydney.**—Leather.
652
- 63 Forsyth, J., & Sons, Sydney.**—Leather.
652
- 64 Alderson & Sons, Sydney.**—Leather.
652
- 65 Bell, H., Sydney.**—Tallow and neat's-foot oil.
652

MANUFACTURES.

Animal and Vegetable Products, Textile Substances, Fertilizers, etc.

66 Hewitt, T. G., Grafton, Clarence River.—Tallow and neat's-foot oil.	652	95 Powell, Edward, Richmond.—Wines.	660
67 Berry, J. S., Botany, Sydney.—Neat's-foot oil and glue.	652	96 Parnell, Montague, West Maitland, Hunter River.—Wines.	660
68 Layton, Fred., Grafton, Clarence River.—Beeswax.	654	97 Wyndham, Wadham, Bukkulla, Inverell.—Wines.	660
69 Sydney Meat Preserving Co., Sydney.—Preserved meats.	656	98 Wyndham, George, Branxton, Hunter River.—Wines.	660
70 Squires, Elam, Penrith.—Preserved fruits, jams, and jellies.	656	99 Monk, D. J., Sydney.—Malt and wine vinegars.	660
71 Hoff, Camille, Nakutakina, New Caledonia.—Preserved pineapples.	656	100 Marshall, J., Paddington Brewery.—Ale and porter.	660
72 Biddell Bros., Sydney.—Preserved lemons and oranges.	656	101 Hardie, John, Sydney.—Biscuits.	661
73 Moore, Charles, Botanic Gardens, Sydney.—Preserved lemons and oranges.	656	102 Layton, Fred., Grafton, Clarence River.—Castor oil.	662
74 Watson Bros., Young.—Flour.	657		
75 Lewis Bros., Tamworth.—Flour.	657		
76 Cohen & Levy, Tamworth.—Flour.	657		
77 Dalton Bros., Orange.—Flour.	657		
78 Neilson Bros., Orange.—Flour.	657		
79 Waters, James, Ravensdale, Brisbane Water.—Arrowroot.	658		
80 Cole, W., & Son, Tomago, Hunter River.—Arrowroot.	658		
81 Laurie, W., & Gloucester, Port Stephens.—Arrowroot.	658		
82 Ryder Bros., Mango Island, Fiji.—Arrowroot.	658		
83 Payne, George, Grafton, Clarence River.—Arrowroot.	658		
84 Champion, George, Ullmarra, Clarence River.—Arrowroot.	658		
85 Munn, A. L., Merimbula.—Maizena.	658		
86 Colonial Sugar Refining Co.—Refined sugars.	659		
87 Martin, George, Grafton, Clarence River.—Sugar.	659		
88 Chowne, E. G., Ullmarra, Clarence River.—Sugars.	659		
89 Biddell Bros., Sydney.—Confectionery.	659		
90 New South Wales Co., Clarence River.—Raw sugars.	659		
91 Fallon, James T., Albury.—Wines.	660		
92 Munro, A., Bebeah, Singleton.—Wines.	660		
93 Carmichael, G. L., & J. B., Porphyry, Williams River.—Wines.	660		
94 Brecht, Carl J. P., Rosemount, Denman.—Wines.	660		
		Textile Substances of Vegetable or Animal Origin.	
		103 Hemmings, F., & W., Loma Loma, Fiji.—Cotton.	665
		104 Ryder Bros., Mango Island, Fiji.—Cotton.	665
		105 Hoff, Camille, Nakutakina, New Caledonia.—Cotton.	665
		106 Moore, Charles, Botanic Gardens, Sydney.—Vegetable fibres of various kinds.	666
		107 Rudder, E. W., Kempsey.—Fibre of gigantic nettle tree.	666
		108 Ramsay, D., Sydney.—Wools.	667
		109 Lowe, A. H., Dynevora.—Wool.	667
		110 May, J. M., Randwick, near Sydney.—Silk materials from the grain to the manufacture, produced by the inmates of the Asylum for Destitute Children, Randwick.	668
		111 Thorne, George, Sydney.—Cocoons and cards of eggs desiccated and pierced, grown at Claremont, Rose Bay, Sydney.	668
		Agricultural Engineering and Administration.	
		112 Bell, H., Sydney.—Bonedust.	681
		113 Berry, J. S., Botany.—Bonedust.	681
		Ornamental Trees, Shrubs, and Flowers.	
		114 Government Printing Office, Sydney.—Orchids of Australia.	712

THE SUN NEWSPAPER

Is printed and published every day in the year, at 166, 168, and 170 Nassau Street, New York City. Its regular edition on secular days now (April, 1876) averages about 140,000; its weekly edition over 88,000; and its Sunday issue is nearly 100,000. It thus prints and sells more than a million copies a week, which are read all over the United States. This is a circulation unprecedented in American journalism, and it is constantly on the increase. In proof of this, let the following figures testify. They show the number of copies of THE SUN printed every week during the year ending March 11, 1876.

WEEK ENDING	COPIES PRINTED.	WEEK ENDING	COPIES PRINTED.
March	20.....849,382	September	18.....860,858
	27.....845,802		25.....858,778
April	8.....857,956	October	2.....868,985
	10.....868,556		9.....870,820
	17.....855,076		16.....878,082
	24.....858,270		23.....874,825
May	1.....869,542	November	30.....876,160
	8.....867,550		6.....908,580
	15.....877,450		13.....852,872
	22.....874,946		20.....847,815
	29.....866,276		27.....836,248
June	5.....873,782	December	4.....845,378
	12.....869,769		11.....1,042,716
	19.....880,348		18.....956,294
	26.....883,846		25.....983,864
July	3.....898,862	January	1.....983,987
	10.....867,574		8.....952,202
	17.....877,400		15.....953,019
	24.....876,282		22.....969,911
	31.....874,216		29.....967,850
August	7.....865,558	February	5.....993,030
	14.....875,982		12.....1,024,647
	21.....880,488		19.....1,027,209
	28.....870,502		26.....1,014,766
September	4.....872,211	March	4.....1,014,998
	11.....860,755		11.....1,028,951
TOTAL.....		46,799,769	

In printing these papers, no less than three million four hundred and twenty-six thousand six hundred and ten (3,426,610) pounds of paper were consumed.

ADVERTISING RATES.

DAILY AND SUNDAY, 40 cents a line, ordinary advertising; large type, 80 cents; and preferred positions, 50 cents to \$2.50, according to classification.

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- b* Quinces from Sir Redmond Barry and J. Webber, Geelong.

- c* The medlar and the loquat.

- d* Peaches from C. Draper, R. Whatmough, W. Lawford, J. McDonald, G. & W. D. Agricultural and Horticultural Society.

- e* Nectarines from R. Whatmough and market.

- f* Apricots, plums, cherrries, and olea europea.

- g* Grapes, mulberries, figs, pomegranates, and oranges.

- h* Kau apples from Mr. Graham and the Melbourne Botanical Gardens.

- i* Gooseberries from Thos. Lang & Co. and F. Moss, Buninyong.

- j* Black, red, and white currants from Thos. Lang & Co.

- k* Raspberries from Henry Boyce.

- l* Almond, walnut, and hazel nuts.

- m* Strawberries.

- n* Tomatoes from Horticultural Society's Gardens; W. Chandler, Scoresby; and King & Son, Fyansford.

- o* Egg apple from H. J. Dines.

- p* Cape gooseberries and capsicums.

- q* Book collection of plants, shrubs, trees, and herbs. 709

- 263 Gaskell, Mrs., Melbourne.**—Fac-similes of Victorian bush flowers. 709

SOUTH AUSTRALIA.—STATISTICAL PREFACE.

THE colony of South Australia embraces 25 degrees of latitude through the centre of the continent of Australia, from the Southern to the Indian Ocean, and is bounded on the east by the colonies of Victoria, New South Wales, and Queensland, and on the west by the colony of Western Australia. Its area is 914,730 square miles, or 585,427,200 acres; being about a third of the area of the United States of America, or ten times that of Great Britain. Its population is 210,699.

Its chief exports are wool, wheat, and copper. In 1875 the exports were valued at £4,442,100—namely: of wool, £1,778,297; of agricultural produce, £1,688,035; of metals, £758,664; and of other products, £217,104. Its revenue in 1875 was £1,143,312, its people not being taxed at a higher rate than 25 shillings a head. The people have purchased land of the government to the extent of 4,634,711 acres, of which 1,400,000 are under cultivation; and the average price paid since 1845 is £1 5s. 2d. per acre. The public debt is about £3,000,000; but, as an offset, is a sum of £2,225,000 due for lands sold to occupiers, and payable within six years.

The natural wealth of the colony in healthy climate, fruitful soils, and abundant minerals, has been greatly augmented by useful and substantial improvements. In addition to numerous ports made serviceable for coasting trade, inland traffic is facilitated by 884 miles of excellent macadamized roads, which have cost over £2,000,000; and by railways of nearly an equal further cost. The public and private buildings, both in towns and country, are mostly of well-built stone, with slate or iron roofs. Gardens and orchards, pasture and arable fields cover the more settled portions of the colony, whilst over hundreds of miles outside of these some 6,000,000 sheep, 200,000 head of horned cattle, many thousands of horses, and a few hundred camels, thrive at large on the native vegetation, save that their ranches, or runs, are mostly inclosed in areas of from 5 to 50 square miles with good post and wire fencing.

The best of meat and bread, fruit and vegetables, grow in abundance in South Australia. People there live well at little cost. Labor is well rewarded. There are not, or ought not to be, any able-bodied paupers in the colony. At the savings' banks, which are guaranteed by government, the small deposits of the poorer classes approximate £800,000, on which four to five per cent. interest is paid. Immigration is promoted by annual money votes, which, through Mr. F. S. Dutton, C. M. G., Agent-General for the colony in London, supplies free or assisted passages for eligible persons.

The government, the laws, and the social institutions, like the people of South Australia, have an Anglo-Saxon character. There is the fullest civil and religious freedom under a vice-regal governor, whose ministers are chosen by, and are responsible to, a majority of two houses of parliament elected by ballot, as to the larger house, of manhood suffrage alone, and, as to the smaller house, by a slightly restricted property qualification. These organizations have worked harmoniously to the contentment of the people.

Churches and schools are numerous. The facilities for acquiring real property in the colony are great, and laws well secure its quiet enjoyment. The public lands are mostly sold on credit: one-tenth per cent. is paid down as interest on the purchase money, which is not less than twenty shillings per acre. The balance is deferred to the sixth year, a second ten per cent. on the purchase money having been paid on the third year as interest. At the sixth year half the

balance may be renewed for four years at four per cent. if needed; but that the State may secure certain benefit from the sale of its lands under a credit system, the purchaser is bound to effect annual improvements. All metals, precious or other, go to the purchaser. The title to real estate from the crown is by registration, of which the purchaser gets a certificate in simple form. This system is popular, for it is ready and inexpensive at the outset, and is returnable to the registration office for record on it of all subsequent dealings, or for substituted certificate, or certificate as needed, in the court of sales. At the close of 1874 the value of landed property, which had passed under it, amounted to £9,260,186. Adjoining colonies have adopted this law.

The settled portions of the colony of South Australia are sectioned off into counties, and these counties, when arable cultivation requires it, are subdivided into hundreds, whose municipal governing bodies can be elected for local public works and education. Outside the hundreds, in the southern portion of the colony, the public lands are left for purely pastoral occupation, for which fourteen or twenty-one years' leases can be procured at moderate rents, regulated much by distance from ports of shipment, except that, both as to public lands inside or outside the hundreds, rights to search for and work minerals are readily granted. The rent of a mining lease is fixed at ten shillings an acre per annum, and fourteen years' term, renewable.

For the northern territory of South Australia, with its tropical climate, the land laws are modified. Land there is open for selection and sale at 7s. 6d. per acre, or for lease over ten years at 6d. per acre per annum. And, for the special growth of sugar, cotton, tea, rice, and tobacco, selections varying from 320 to 1280 acres can be made at a rental of 6d. per acre per annum for five years, when, if the land has been inclosed and one-half under cultivation, a free grant is procurable.

In 1872 South Australia erected 1973 miles of telegraph wire across her territory, and, at a cost of £350,000, connected Australia with India and Europe.

• • •

Commission from SOUTH AUSTRALIA (ADELAIDE) to the International Exhibition:

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HON. W. EVERARD, Commissioner of Crown Lands.	GEORGE MCEWEN, ESQ., J. P.
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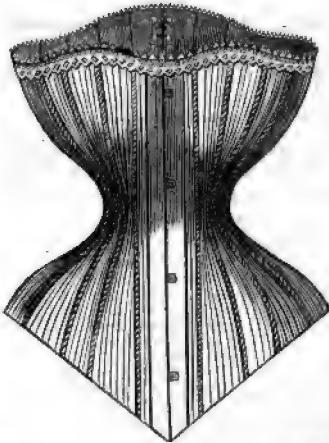
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20.	Whooping-Cough, Spasmodic Cough	50
21.	Asthma, Oppressed, Difficult Breathing	50
22.	Ear Discharges, Hardness of Hearing	50
23.	Scrofula, Swellings and Ulcers	50
24.	General Debility, or Physical Weakness	50
25.	Dropsey, Fluid Accumulations	50
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27.	Urinary Diseases, Gravel, Renal Calculi	50
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SOUTH AUSTRALIA.

(*North of Nave, Columns 10 to 17.*)

COLLECTIVE EXHIBIT.

Minerals, Chemical Manufactures, Ornaments, Plants.

Minerals, Ores, Stone, Mining Products.

- 1 Clark, F., & Sons, Adelaide.—Iron and copper ores; bismuth. 100
2 Balhannak Mining Co., Adelaide.—Iron and copper ores; bismuth. 100
3 North Yelta Mine, W. Adelaide.—Iron and copper ores; bismuth. 100
4 Moonta, Wallaroo, and other mines, W. Adelaide.—Iron and copper ores; bismuth. 100
5 Crabb, R. S., Adelaide.—Copper and malachite from the Burra Burra mine, W. Adelaide. 100

COLLECTIVE EXHIBIT OF AURIFEROUS QUARTZ FROM THE NORTHERN TERRITORY OF SOUTH AUSTRALIA, BY THE COMMISSIONERS FOR THE FOLLOWING OWNERS.

- 6 Auliffe, I. H., W. Union Mine.
7 Becker, I., Yam Creek.
8 Bresse & Starke, Extended Union Mine.
9 Caledonia New Amalgamated Co.
10 Golden Stream Claim.
11 Griffiths, W. K., South Union Mine.
12 Grove Hill Co.
13 Gunn, J. H., Britannia Reef.
14 Lewis, John, Pine Creek.
15 Bernardo, M., Pine Creek.
16 New Telegraph Co.
17 Sandy Creek Claim.
18 Shepperd, E., John Bull Reef.
19 Sandy Creek Puddling Co.
20 Tripp, J. P., Lady Alice and Union Reef.
21 Union Prospectors Co.
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26 Davenport, Samuel, Adelaide.—Olive oil. 20x

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	Horticulture.
74 Chinnery, Charles, Addington, Canterbury.—Phormium fibre.	666
75 Taranaki Committee.—Phormium.	666
76 Forbes, R. W., New York.—Phormium.	666
77 Bevan, Thomas, jr., Otaki.—Hank of phormium.	666
78 Peter, W. S., Anama, Ashburton, Canterbury.—Merino wool.	667
79 Bealey, Samuel, Canterbury.—Merino and Romney Marsh wool.	667
80 Rutherford, A. W., Amuri, Nelson.—Merino wool.	667
81 Anstey, G. A., Amuri, Nelson.—Merino wool.	667
82 Wason, J. Cathcart, South Rakaiā, Canterbury.—Wools.	667
83 Hall, John, Hororata, Canterbury.—Merino wool.	667
84 Rickman, F. M., Rangiora, Canterbury.—Romney Marsh wool.	667
85 Braithwaite, Arthur, Hutt, Wellington.—Romney Marsh wool.	667
	• • •
86 Coates, Laning, Christchurch.—Live ferns.	707

CAPE OF GOOD HOPE.—STATISTICAL PREFACE.

THE colony of the Cape of Good Hope is bounded north and northeast by the Orange river, which divides it, in parts of its course, from the Free State; east and northeast by the Tees, a small tributary of the Orange, the Stormbergen Mountains, and the Indwe and Great Kei, which two rivers separate the Cape Colony from Kaffirland; on the south it is bounded by the Indian Ocean, and on the west by the Atlantic. Latitude $28^{\circ} 10'$ to $34^{\circ} 51'$ south; longitude $16^{\circ} 20'$ to $28^{\circ} 20'$ east. The breadth on the greatest meridian is about 450 miles, the length on the largest parallel about 600 miles, and the total area is about 201,000 square miles. The colony is generally considered as forming two sections, the Western and Eastern Provinces, each divided into 16 electoral divisions, which are again subdivided for fiscal and magisterial purposes. The first regular census (1865) gave the following result as to the numbers of the population:

White, or European,	181,592
Hottentot,	81,598
Kaffir,	100,536
Other colored,	132,655
	496,381

Since the census, the annexation of British Kaffraria, Basutoland, Fingoland, and Normansland, added 5847 whites and 273,930 colored to the population, making the total, **776,158**.

Hydrographically, the country, as a whole, is decidedly superior to most parts of Africa. The seaboard presents several comparatively safe and commodious harbors. Of these, however, two—Table Bay in the Western Province, and Algoa Bay in the Eastern—absorb nearly the whole of the foreign trade. Hardly any of the ports command navigable communication with the interior.

The highest range of mountains within the colony is 9000 feet above the sea. The dividing ridge runs parallel with the coast at a distance of 100 miles. Between the principal range and the sea, on the east, there are two other ranges, less continuous and regular; the intermediate one generally more distant from the first than they are from each other.

The prevalent winds—the southeast in summer, and the northeast in winter—mitigate each the rigor, whether heat or cold, of its own season; and, in spite of occasionally sudden and great changes, render the temperature, as a whole, one of the most salubrious and delightful in the world. The mean temperature of the year at Cape Town is about 68° F.; that of the coldest month being 57°, and of the hottest, 79°.

The value of the total exports and imports of the Cape Colony, including British Kaffraria, was, in 1873, as follows:

Imports,	£5,451,927
Exports,	4,011,327

Among the articles of export, wool is the most important, forming nearly nine-tenths of the total. Among the other leading items are copper ore, feathers, and sheepskins.

There were, at the end of 1865, in the colony, 692,514 head of cattle and 9,836,065 sheep. The sheep farms are often of very great extent, comprising from 3000 to 15,000 acres and upwards. Those in tillage are comparatively small. The graziers are, for the most part, proprietors of the farms they occupy, paying a quit rent to government, as the original owner of the soil.

There were lines of railways of a total length of 134 miles at the end of 1874, and a system of other main lines, as well as of telegraphs, was under consideration by the government.

The constitution vests the executive in the Governor and an Executive Council, composed of certain officeholders appointed by the crown. The legislative power rests with a Legislative Council of 21 members, and a House of Assembly of 66 members.

The income and expenditure of the colony, during 1873, were as follows:

Revenue,	£2,078,220
Expenditure,	2,159,658

Included in the above receipts is a loan of £859,000 for public works. The public debt, on the 1st of January, 1875, amounted to £1,723,144.

Commissioner from the CAPE OF GOOD HOPE to the International Exhibition:

MR. H. CRAWFORD COATES, Executive Commissioner.

CAPE OF GOOD HOPE.

(*North of Nave, Columns 10 to 17.*)

COLLECTIVE EXHIBIT.

Metallurgy, Furniture, Aboriginal Utensils, Maps, Books.

Minerals, Ores, Stone, Mining Products.

- 1 Cape Copper Mining Co. (limited), Cape Town.—Copper ores from Ookiep, Spectakel, Narap, Karolusburg, and Kilderman mines, Little Namagualand. 100
- 2 Bright, H. C. R., Mowbray, near Cape Town.—Copper ores and collection of minerals. 100
- 3 Dickson, W. W., Cape Town.—Black oxide of manganese, from Hercules mine. 100
- 4 Barry & Herdon, Mossel Bay.—Diamonds and associated rocks. 100
- 5 Wise, G., Stormberger.
a Saltpetre from the Stormberger. 100
b Coal from the Stormberger. 101
- 6 Wilson, A., Gas Works, Cape Town.—South African coals, cokes, and ashes. 101

Metallurgical Products.

- 7 Cape Copper Mining Co. (limited), Cape Town.—Copper. 111

Chemical Manufactures.

- 8 Smithers, J. & G., Cape Town.—Soaps. 201

Furniture, and Objects of General Use in Construction and in Dwellings.

- 9 Moulton, R., Suellendam.—Work-box constructed of South African woods. 217
- 10 Lessar, W., Cape Town.—Table constructed of various colonial timbers. 217

Clothing, Jewelry, and Ornaments, Traveling Equipments.

- 11 Perry, Mrs., Cape Town.—Melon seed necklaces, bracelets, etc. 252
- 12 Gladwin, J. P., Kafirland.—Hair of Pondo mise, surmounted by ring of Euphorbia sap; ivory earrings of Pondo misi skin; dress of witch doctor. 253
- 13 Local Committee, Cape of Good Hope.—Native articles of dress—necklaces, armlets, aprons, head-dress, ear-rings, etc. 253

Weapons, etc.

- 14 Barry & Herdon, Mossel Bay.—Kafir assegais. 268
- 15 Local Committee of Cape of Good Hope.—Knobk kerie of rhinoceros horn. 268
- 16 Vigors, P., Cape Town.—Native weapons, Kafirassegais, Bushmanaxe. 268

Medicine, Surgery, Prothesis.

- 17 Auret, W. H., Paarl.—Vegetable drugs and medicines. 272
- 18 Barkly, Sir H., Governor of Cape Colony.—Bitter barks used by Kafir doctors in fever cases. 272

Fabrics of Vegetable, Animal, or Mineral Materials.

- 19 Local Committee of Cape of Good Hope.—Kafir beer and milk pots, Kafir and basuto baskets. 289

Educational Systems, Methods, and Libraries.

- 20 Salomon, C., Cape Town.—Map of South Africa. 300
- 21 Barry & Herdon, Mossel Bay.
a Map. 300
b Specimens of ornamental bookbinding. 306
- 22 Salomon, Saul, & Co., Cape Town.—Specimens of bookbinding. 306
- 24 Local Committee of Cape of Good Hope.—Catalogue of South African Public and Sir G. Grey's libraries; University calendar; reports of South African Museum, Public Library, and Botanic Gardens; Dr. Bleek's Bushman Researches. 306
- 25 Juta, J. C., & Co., Cape Town.—Books. 306
- 26 Mabilie, A., Morija, Basutoland.—Books printed, bound, and published at Morija Mission Station, Basutoland. 306
- 27 Stewart, G., Lovedale, Kafirland.—Books printed, bound, and published at the Lovedale-Kafir Mission Institution. 306

Art, Agricultural, Animal, Vegetable Products, Textile Substances.

Engineering, Architecture, Maps, etc.

- 28 Local Committee of Cape of Good Hope.**—Models of harbor works and dry docks at Cape Town. 330
29 Dunn, E. I., Cape Town.—Geological sketch map of Cape Colony. 335

Paintings.

- 30 Hermann, W., Cape Town.**—Oil paintings. 410
 a View in Kryns Forest, Cape Colony.
 b View of Three Anchor Bay, near Cape Town.
31 Coppen, F., Cape Town.—Water color sketches. 411
 a Sketch of Hangklip, a spur of the Stormbergan, Queenstown Division.
 b Sketch of the Mac Mac Falls, Lydenburg gold fields, South African Republic.
32 Hays, Miss Anna, Cape Town.—Water color sketch of the native population of Cape Town. 411
33 Hermann, W., Cape Town.—Six water color sketches of colonial scenery. 411
34 Thwaits, Miss F. C., Cape Town.—Six water color drawings of indigenous Cape flowers. 411

Engraving and Lithography.

- 35 Barry & Herdon, Mossel Bay.**—Pictures and photographs. 430
35 a Bruton, C. I., Cape Town.—Photographs. 430
 a Views of Cape Town.
 b View of Kloof Lodge, near Cape Town.
 c Views of scenery ground.
35 b Barnard, S. B., Cape Town.—Photographs of Cape Town, natives, etc., in a book. 430
35 c Fenneysey, C. D., George.—Photographs of colonial scenery. 430

Arboriculture and Forest Products.

- 36 Carson, E. J., Ookiep, Namagualand.**—Ebony. 601
37 Holland, B. H., Alexandria, Cape Colony.—Specimens of timber from the Alexandria brown forests, with articles made from various woods. 601
38 Mossop & Garland, Cape Town.—Barks in the rough and ground. 602
39 Smithers, J. & G., Cape Town.—Vegetable wax. 603
40 Dale, Dr., Cape Town.—Vegetable wax. 603

Agricultural Products.

- 41 Barry, Arnold, & Co., Cape Town.**—Wheat. 620
42 Myburgh, N., Meerlust, Ersle River.—Wheat. 620
43 Barry & Herdon, Mossel Bay.—Aloes. 623
44 Barry & Nepheus, Cape Town.—Aloes. 623
45 Jongh, S. J. de, Cape Town.—Snuff. 623
46 Powrie, E., Mossel Bay.—Leaf tobacco and snuff. 623

- 47 Gibbon, J. M., Cape Town.**—Cochineal, grown and dried in the Botanic Gardens, Cape Town. 638

Water Animals, Fish Culture, and Apparatus.

- 48 Merriman, John, Cape Town.**—Preserved crayfish from Table Bay. 643
49 Modie, D., Suellendam.—Pearl oyster shells from the south coast of the colony. 645

Animal and Vegetable Products.

- 50 Dier & Diets, Port Elizabeth.**—Skins. 652
51 Mossop & Garland, Cape Town.—Leather. 652
52 Local Committee, Cape of Good Hope.—Skins of the blackbacked jackal and aard wolf. 652
53 Dickson, W. W., Cape Town.—Skins of the lion and cheetah or hunting leopard. 652
54 Vigors, P., Cape Town.—Lion and leopard skins, head of a leopard, antelope and rhinoceros horns. 652
55 Local Committee of Cape of Good Hope.—Ostrich feathers and eggs. 653
56 Barry & Herdon, Mossel Bay.—Ostrich incubator, with stuffed ostriches and eggs. 653
57 Powrie, E., Mossel Bay.—Beeswax. 654
58 Barry & Nepheus, Cape Town.—Beeswax. 654
59 Toit, A. L. du, Rondobosch.—Grapes in brandy. 656
60 Merve, J. H. von der, Robertson.—Grapes in brandy. 656
61 Falck, J. A. H., Montaga.—Peaches in brandy. 656
74 Ryn, J. H. Ivan, Cape Town.—Pontac, red, and white wines. 660
75 Reenen, S. van, & Co., High Constantia.—Red and white wines. 660
76 Anderson & Murrison, Cape Town.—Pontac, pale, and golden sherry wines. 660
77 Green, J. K., Cape Town.—Red, white, and sherry wines. 660
78 Collison, H. C., Cape Town.—Sherry, Madeira, pontac, and Constantia wines. 660
79 Joubert, W. A., Stellenbosch.—Dry white wine. 660
80 Paarl Wine and Brandy Co., Paarl.—Red and white wines. 660
81 Rosenberg, S., Cape Town.—Brandy. 660
82 Barry & Nepheus, Cape Town.—Brandy. 660
83 Barry & Herdon, Mossel Bay.—Constantia wine and vinegar. 660
Textile Substances of Vegetable or Animal Origin.
- 84 Grewar, John W., Uitenhage.**—Wool. 667
85 Priest, W., Graff Reinet.—Wool. 667

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FISH HOOKS,

SMALL WARES,

ETC., ETC.

Textile Substances, Vegetable Products, Flower Ornaments.

86	Rubidge, C., Graff Reinet.—Wool.	667
87	Stewart, A. C., Port Elizabeth.—Wool.	667
88	Court, P. W., Port Elizabeth.—Wool.	667
89	Barry & Nepheus, Cape Town.—Wool.	667
90	Barry, Arnold, & Co., Cape Town.—Wool.	667
91	Dier & Diets, Port Elizabeth.—Wool.	667
92	Barry & Herdon, Mossel Bay. a Wool.	667
	b Mohair.	669
93	Stewart, A. C., & Co., Port Elizabeth.—Angora hair.	669
Ornamental Trees, Shrubs, and Flowers.		
94	Villiers, Miss de, Fransche Hoek.—Articles made of everlasting flowers.	709
95	Smuts, Miss G., Cape Town.—Article made of everlasting flowers.	709
96	Volstedt, P. J., Cape Town.—Preserved lemons, citrons, narties, bitter oranges, melous, and Cape gooseberries.	656
97	Merriman, John, Cape Town.—Preserved tomatoes and Cape gooseberries.	656
98	Clear, E., Cape Town.—Wheat flour.	657
99	Lettersteat & Co., Cape Town.—Wheat flour.	657
100	Barry, Arnold, & Co., Cape Town.—Wheat flour.	657
101	Heindenrych, B. G. P., Cape Town.—Starch from wheat flour.	658
102	Ryn, J. H. Ivan, Cape Town.—Brandy.	660
103	Collison, H. C., Cape Town.—Cognac.	660
104	Hauf, Dr., Robertson.—Brandy.	660
105	Marais, H. H., Robertson.—Cape sherry wine and congo brandy.	660
106	Villiers, A. J. J. de, Cape Town.—Sherry, port, and red wines.	660
107	Villiers, A. B. de, Paarl.—Red and white wines.	660

JAMAICA.—STATISTICAL PREFACE.

JAMAICA, one of the West India Islands, and by far the most important of those belonging to Great Britain, is about 90 miles to the south of Cuba, and stretches in north latitude between $17^{\circ} 40'$ and $18^{\circ} 30'$, and in west longitude between $76^{\circ} 15'$ and $78^{\circ} 25'$. Area, 6900 square miles; population (in 1871), 506,154, of whom less than three per cent. were white. The greatest length of the island is 150 miles, and its greatest breadth, 50 miles. It is traversed from east to west by a heavily timbered ridge called the Blue Mountains, which rises to about 7000 feet. From this range at least 70 streams descend to the north and south shores; one of these, the Black river, affords for small craft a passage of about 30 miles into the interior. The others, owing to the shortness and declivity of their course, are not navigable. Excellent harbors are everywhere to be found. The best of these is formed by a deep and capacious basin, in the southeast quarter of the island, which washes the most spacious and fertile of the plains between the hill country and the coast. Around this inlet, and within a few miles of each other, are all the considerable centres of population, Port Royal, Kingston, and Spanish Town.

The climate varies considerably, the torrid belt of the coast gradually passing into the temperate region of the central heights. The latter is said to be remarkably favorable to longevity; and, after having long been a retreat for the residents themselves, it has lately begun to attract invalids from the United States. To contrast two positions—the one near Kingston harbor, the other at an intermediate elevation of 4000 feet—their annual mean temperature are stated to be respectively 81° F. and 68° F.

In 1871 the chief exports were in value as follows: Sugar, £502,193; rum, £271,267; coffee, £147,562; logwood, £115,423; while the chief imports were: Flour, £135,500, and salt-fish, £92,801. During the same year the revenue amounted to £434,564; the expenditure to £430,154.

The sum of £19,403 was devoted to the support of the schools during the year 1872.

Commissioner from JAMAICA to the International Exhibition:
MR. ROBERT THOMPSON.

JAMAICA.

(North of Nave, Columns 10 to 17.)

COLLECTIVE EXHIBIT.

Manufactures and Agricultural Products.

Chemical Manufactures.

1 Reynolds, John N.—Salt.	200
2 Frith & Murphy.—Salt.	200
3 Grant, Charles.	
^a Bisulphate of lime.	200
^b Chewsticke powder and odontine.	203
4 Thomson, Robert, Superintendent of Botanical Gardens, Kingston, for the government.—Essential oils.	203
5 Auvray, P. E.—Odontine.	203

Yarns and Woven Goods of Vegetable or Mineral Materials.

6 Thomson, Robert, Superintendent of Botanical Gardens, Kingston, for the government.—Palm and plantain leaf mats.	229
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Clothing, Jewelry, etc.

7 Thomson, Robert, Superintendent of Botanical Gardens, Kingston, for the government.	
^a Palm leaf hats.	251
^b Baskets and fans from leaves; shell baskets; walking sticks; bamboo whip; tortoise shell combs and necklaces; napkin rings and egg cups; doilies and fans made of lace bark.	254
8 Brooks, Mrs. G.—Doilies and fans made from lace bark, etc.	254

Paper, Blank Books, and Stationery.

9 Thomson, Robert, Superintendent of Botanical Gardens, Kingston, for the government.	
^a Rulers.	258
^b Paper stock.	260

Medicine, Surgery, Prothesis.

10 Thomson, Robert, Superintendent of Botanical Gardens, Kingston, for the government.—Cinchoma, jalap, senna, aloes.	272
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Hardware, Edge Tools, Cutlery, and Metallic Products.

11 Thomson, Robert, Superintendent of Botanical Gardens, Kingston, for the government.—Razor strops made from stems of plants.	281
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Fabrics of Vegetable or Mineral Materials.

12 Thomson, Robert, Superintendent of Botanical Gardens, Kingston, for the government.	
^a Brushes from the penitentiary.	286
^b Ropes from sisal hemp; coir; wild cotton, cocoanut, etc.	287
^c Bamboo baskets.	289

Carriages, Vehicles, and Accessories.

13 Brass, John, & Son.—Carriage harness and riding saddle.	296
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Arboriculture and Forest Products.

14 Thomson, Robert, Superintendent of Botanical Gardens, Kingston, for the government.	
^a Cedar, lignum vitæ, oak, bamboo, etc.; cedar and juniper shingles; pimento leaves and berries, and juniper wood, etc., for making perfumery; lace, cedar, and penquin barks.	600
^b Mahogany, ebony, satinwood, rosewood, etc.	601
^c Logwood, fustic, annatto, turmeric, etc.; diri-diri, mangrove, catechu, etc.	602
15 Pantrepant Estate.—Lace bark.	600

Agricultural Products.

16 Thomson, Robert, Superintendent of Botanical Gardens, Kingston, for the government.	
^a Peas and beans.	621
^b Ginger, pimento, nutmegs, vanilla, cayenne pepper, etc.; tobacco, tea, cocoa, and chocolate; coffees from the following parties, John McLean, Francis Chalmer, John Davidson, Mrs. MacLaeverty, Mrs. Lascelles, Dr. Stephens, James Harrison, Ernest Elliott.	623
17 Soutar & Co.—Tobacco and cigars.	623
18 Richards, W. S.—Coffee.	623

Animal and Vegetable Products.

19 Grant, Charles.—Beeswax.	654
20 Brass, John, & Son.—Honey and beeswax.	654

Animal and Vegetable Products, Textile Substances.

21 Auvray, P. E.—Bleached wax.	654	& Nephew, George J. Peynado, Alberga & Mitchell.	660
22 Thomson, Robert, Superintendent of Botanical Gardens, Kingston, for the government.		✓ Cocanut, castor, groundnut, and other oils.	662
<i>a</i> Candied fruits and preserves; pickles, etc.; fruits preserved in alcohol; meal made from plantains, bananas, cassava, bread, and other fruits.	656		
<i>b</i> Corn, rice, and flour.	657		
<i>c</i> Starch, arrowroot, etc.	658		
<i>d</i> Sugars from the following parties: W. S. Richards, Albion estate; Louis Verley, Mona estate; Ernest Elliott, Bog estate; James Harvey, Hillside estate; Joseph Reed, Caymannas estate.	659		
<i>e</i> Rums from the following parties: David Galloway, Vale Royal estate; William Vickers, Frome and other estates; M. C. Morgan, Appleton estate; James Harrison, Hordley and other estates; Plato Elphick, Belvidere estate; W. S. Richards, Hopewell estate; Ernest Elliott, Bog and other estates; Louis Verley, Mona estate; C. W. Steer, Blenheim estate; F. Hall, Mexico estate; James Harvey, Hillside estate; Joseph Reed, Camanas estate; J. Wray			

Textile Substances of Vegetable or Animal Origin.

23 Gadpaille, Charles.—Rum.	660
24 Melville, James.—Rum and Falernian wine.	660
25 Desnoes, P., & Son.—Rum, ginger cordial, orange wine, pimento dram, etc.	660
26 Nunes, Robert.—Rum.	660
27 King, Alexander, & Co.—Rum and lime-juice.	660

CANADA.

(North of Nave, Columns 16 to 23.)

Chemical Manufactures.

Chemical Manufactures.

1 Cowan, A., Brockville, Ont.—Salt, nitre cake; nitric, muriatic, and sulphuric acids; sodium nitrate.	200	14 Sharp, Jos. S., Apohaqui, N. B.—Salt.	200
2 Gray, Young, & Spaulding, Seaforth, Ont.—Salt.	200	15 Shaw, P., Quebec, Q.—Carbonate of potassium.	200
3 Coleman & Garnishlock, Seaforth, Ont.—Salt.	200	16 Povat, John S., Markham Village, Ont.—Sulphate of ammonium.	200
4 Stapleton Salt Works, Clinton, Ont.—Salt.	200	17 Cooper, Robt., Toronto, Ont.—Washing crystals.	200
5 International Works, Goderich, Ont.—Salt.	200	18 Lane, T. G., Hamilton, Ont.—Washing and bleaching crystals.	200
6 Tecumset Works, Clinton, Ont.—Salt.	200	19 Saunders, Wm., London, Ont.—Pharmaceutical preparations.	200
7 Pratt, Samuel, Clinton, Ont.—Salt.	200	20 Lyman, Clare, & Co., Montreal, Q.—Pharmaceutical preparations.	200
8 Bruce Salt Co., Kincardine, Ont.—Salt.	200	21 Evans, Mercer, & Co., Montreal, Q.—Pharmaceutical preparations.	200
9 Gray & Scott, Kincardine, Ont.—Salt.	200	22 Lyman Bros. Co., Toronto, Ont.—Pharmaceutical and chemical preparations.	200
10 Harrison & Evans, Goderich, Ont.—Salt.	200	<i>a</i> Oil for paints.	201
11 Merchants' Salt Co., Seaforth, Ont.—Salt.	200	<i>c</i> Paints in oil.	202
12 Geological Survey, Canada, Q.—Salt, salt cake, salt gypsum cake, residue for crystallizing pans, salt scales.	200	23 Lyman, Clare, & Co., Montreal, Q.—Oil.	201
13 Mercer, Thomas, Cardwell, N. B.—Salt.	200	24 Savage, Alfred, & Son, Montreal, Q.—Oil.	201
		25 Morse, Geo. D., & Co., Toronto, Ont.—Soap, candles, tallow, lard, and oils.	201
		26 Victoria Manufacturing Co., Toronto, Ont.—Toilet soaps.	201
		27 BatSalou Soap Works, Montreal, Q.—Soaps.	201

MANUFACTURES.

Chemical Manufactures, Brick, Pottery.

- 28 Hood, A. W., & Son, Montreal, Q.—Soaps.** 201
29 Albert Toilet Soap Co., Montreal, Q.—Soaps. 201
30 Spinelli, R., Montreal, Q.—Paraffine soaps. 201
31 Lyman, S. J., Montreal, Q.—Phosphorus soap. 201
32 Torrey, W. S., Moncton, N. B.—Soaps and candles. 201
33 Waterman Bros., London, Ont.—Hard and soft coke from petroleum, crude and refined petroleum, paraffine oil, benzine, axle oil, tar from petroleum, paraffine scales. 201
34 Beliveau Albertite & Oil Co., Westmoreland, N. B.—Mineral oil from Albertite. 201
35 Newton, James, Limehouse, Ont.—Ferruginous rock and paints. 202
36 Leeds Paint Manufacturing Co., Mallorytown, Ont.—Ferruginous rock and paints. 202
37 McLure, David, Toronto, Ont.—Printing and writing inks, lithographic varnish. 202
38 Merril & Flint, Elzyvir, Ont.—Iron ochre purplish brown. 202
39 Buchanan Mineral Co., Walsingham, Ont.—Paints and colors. 202
40 McKay, William, Ottawa, Ont.—Liquid drier for paint, printers' ink. 202
41 Lymans, Clare, & Co., Montreal, Q.—Paints. 202
42 Ramsay, T., Montreal, Q.—Paints. 202
43 Carson, A., Quebec, Q.—Pigments, limonite. 202
44 Ramsay, A., & Son, Montreal, Q.—Paints. 202
45 Montreal Plumbago Mining Co., Montreal, Q.—Stove polish, crucibles. 202
46 Martin, Charles, Montreal, Q.—Stove polish, crucibles. 202
47 Robertson, James, Montreal, Q.—White lead, putty. 202
48 Hall, G. B., Quebec, Q.—Ochres. 202
49 Robitaille, Dr., Quebec, Q.—Red ochre. 202
50 Carroll, E., St. Anne-du-Machiche, Q.—Ochre. 202
51 Geological Survey, Montreal, Q.—Ochres. 202
52 McDougall, John, & Sons, Three Rivers, Q.—Ochres. 202
53 Copeland & McLaren, Montreal, Q.—Iron oxide. 202
54 Burne, Chas. C., St. John, N. B.—Red paint. 202
55 Thompson, G. T., & Sons, St. John, N. B.—White lead. 202
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58 Saunders, Wm., London, Ont.—Perfumery. 203
59 Victoria Manufacturing Co., Toronto, Ont.—Perfumery. 203
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61 Hamilton Powder Co., Hamilton, Ont.—Gunpowder in canisters. 204
62 Manuvilling, J. J., Hampton, N. B.—Matches. 204
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63 Nightingale, Thos., Yorkville, Ont.—Drain tiles. 206
64 Bulmer & Douglas, Yorkville, Ont.—Drain tiles, bricks. 206
65 Spencer, H., Brantford, Ont.—Drain tiles. 206
66 Riggins, George, Kincardine, Ont.—Bricks. 206
67 Russell, Samuel, London, Ont.—Bricks. 206
68 Munn & Cochner, Dundas, Ont.—Bricks. 206
69 Robert & Leslie, Glenwilliam, Ont.—Bricks. 206
70 Townshend, Mrs. Mary, Yorkville, Ont.—Bricks. 206
71 Anderson, Thomas, Bell's Corners, Ont.—Bricks. 206
72 Cashmore, Thos., Pembroke, Ont.—Bricks for window jambs. 206
73 McGregor, Daniel, Pembroke, Ont.—Bricks. 206
74 Baker, Wm., Arnprior, Ont.—Bricks. 206
75 Coulter, Jas., Ramsay, Ont.—Bricks. 206
76 Metcalf, Jas., Ramsay, Ont.—Bricks. 206
77 Moore, Gilbert, Ramsay, Ont.—Bricks. 206
78 Foshick, Eneas, Ramsay, Ont.—Bricks. 206
79 Workman, Hugh, Brantford, Ont.—Bricks. 206
80 Foster, W. A., Belleville, Ont.—Bricks. 206
81 Pratt, Charles, London, Ont.—Pottery. 206
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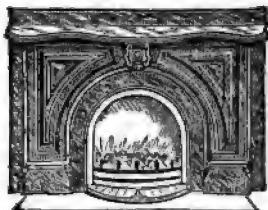
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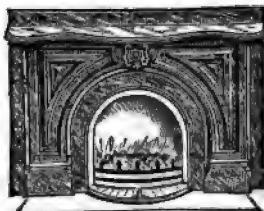
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GERMANY.

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Chemical Manufactures.
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1	Kahlbaum, C. A. F., Berlin.	22	Hübner, B., Rehmsdorf.
2	Weidenbusch & Co., Wiesbaden.	23	Saxon Thuringian Joint Stock Co., Halle-on-Saale.
3	Vorster & Grüneberg, Kalk, near Cologne.	24	Ruffer & Co., Breslau.
4	Schuchardt, Theodor, Görlitz.	25	Hisgen, G. C., Nassmühle, near Hanau.
5	Koepf, Rud., & Co., Oestrich.	26	Frankfort Aniline Factory, Gans & Leonhardt, Frankfort-on-Main
6	Saame & Co., Ludwigshafen.	27	Clever, Joh., Werden, Rhine Province.
7	Th. Wurtz's successors, Leipsic.	28	Joint Stock Co. for Manufacturing Aniline, at Rummelsburg, Berlin.
8	Von Heyden, F., Dresden.	29	Nuremberg Ultramarine Factory, Johann Zeltner, Nuremberg.
9	Joint Stock Chemical Works (formerly E. Schering, Berlin).	30	Gysae, Robert, Oberlösnitz.
10	Jobst, Friedrich, Stuttgart.	31	Marienberg Blue Color Works Joint Stock Co., Marienberg.
11	Fischer & Schmitt, Höchst.	32	Neubert, C. Ed., Blankenburg.
12	Brohme & Co., Bergen-on-Dumme.	33	Kaiserslautern Ultramarine Works, Kaiserslautern.
13	Bartels & Koyeman, Frohse.	34	Rosenstein, W., Stettin.
14	Tromsdorf, H., Erfut.	35	Vossen Bros. and L. Vossen & Co., Aix-la-Chapelle.
15	Lindenbauer, Otto, Hanau.	36	Hirsch & Merzenich, Cologne.
16	Marquart, L. C., Bonn.	37	Bayer & Co., Fr., Barmen.
17	Loeflund, Edward, Stuttgart.	38	Johann Maria Farina, gegenüber dem Altmarkt, Cologne.
18	Suhr, W., Altona.	39	Johann Anton Farina, zur Stadt Mailand, Cologne.
19	Heyl, J. F., & Co., Berlin.	40	Mack, Ernst, Reichenhall.
20	Sauberlich, Anton, Zwickau.		
21	Bloedner's, Joh. Chr., Son, Gotha.		

MANUFACTURES.

Chemical Manufactures, Ceramics, Furniture.

- 41** Goedecke & Co., Leipsic.
42 Kluge & Pöritzsch, Leipsic.
43 Bernhardi, J. Leipsic.
44 Brückner, Lampe, & Co., Leipsic.
45 Sachse, E. & C., Leipsic.
46 Haensel, Heinr. Pirna-on-Elbe.
47 Wolff & Son, F. Carlsruhe.
48 Langwisch, Bernh., Hamburg.
49 Lohse Gustav, Berlin.
50 Wilhelm, F., Reudnitz.
51 Lüder & Leidloff's successors, Dresden.
52 Kunheim & Co., Berlin.
53 Haarmann W., Holzminden.
54 Nörr, Eugene, Berlin.—Siphon valve. ²⁰⁰
- COLLECTIVE EXHIBIT OF BAVARIAN METAL LEAF AND BRONZE COLORS.** ²⁰²
- 55** Hoenle, Leo, Munich.
56 Wiessner, Joh. Georg & Bub., Schwabach.
57 Fuchs, Gg. L., & Sons, Fürth.
58 Nucherlein, Fried., Fürth.
59 Metz, Friedrich, Fürth.
60 Stoerber & Segitz, Fürth.
61 Schaezler, G. E., Nuremberg.
62 Weidner, J. L. & P., Nuremberg.
63 Reich, H. & Chr., Nuremberg.
64 Meta Beaters' Union of Fürth, Nuremberg, Schwabach, and Zirndorf, Fürth.
65 Eiermann & Tabor, Fürth.
66 Brunnbauer, Heinr., Munich.
67 Spiegelberger Fürth.
68 Cramer, J. W., Fürth.
69 Beckh, Georg Adam, Nuremberg.
70 Weiss, Feyertag, & Schlenk, Nuremberg.
71 Kühn's Wire Factory, Nuremberg.
72 Meier, J. C., Fürth, near Nuremberg.
73 Beyer, Edward, Chemnitz.—Chemical inks. ²⁰²
- 74** Jänecke Brothers & F. Schneemann, Hanover.—Printer colors, varnishes ²⁰²
- 75** Vogel, M. B., Leipsic.—Colors. ²⁰²
- 76** Johann Maria Farina, Jülichplatz No. 4, Cologne.—Eau de Cologne. ²⁰³
- 77** F. Maria Farina, Glockengasse 47¹¹, Cologne.—Eau de Cologne. ²⁰³
- 78** Schimmel & Co., Leipsic.—Ether, oils, essences. ²⁰³
- 79** Gadamer & Jaeger, Waldenburg.—Swedish matches. ²⁰⁴
- 80** Hochstatter, Heinrich, Langen, near Darmstadt.—Matches, etc. ²⁰⁴
- Ceramics—Pottery, Porcelain, Glass, etc.**
- 81** Mendheim, Georg, Berlin.—Plans for stove; clay goods. ²⁰⁶
- 82** Gundlach Bros., Grossalmerode.—Clay goods. ²⁰⁷
- 83** Gundlach, W., & Son, Grossalmerode.—Clay goods. ²⁰⁷
- 84** Stettin Chamotte Works, Joint Stock Company.—Chamotte reports. ²⁰⁷
- 85** Gundlach, Joh., jr., Grossalmerode.—Clay goods. ²⁰⁷
- 86** Lonitz Hugo, Neuhausen-Slaben.—Clay goods. ²⁰⁷
- 87** Villeroy & Boch, Mettlach.—Mosaic tiles. ²⁰⁸
- 88** Joint Stock Company for Telegraph Supplies, Berlin.—Porcelain for chemical uses. ²¹⁰
- 89** Royal Porcelain Works, Berlin.—Porcelain. ²¹³
- 90** Hanke, Reinhold, Höhr, near Coblenz.—Antique German stone pitchers. ²¹³
- 91** Merkelbach & Wick, Grenzhausen.—Clay goods. ²¹³
- 92** Joint Stock Association of Looking-glass Manufacturers and Manufacturing Chemists of St. Gobain, & Chauny & Cirey, Stolberg, near Aix-la-Chapelle.—Looking-glass plates. ²¹⁴
- COLLECTIVE EXHIBIT OF BAVARIAN LOOKING-GLASSES AND LOOKING-GLASS PLATE.** ²¹⁴
- 93** Schaller, Joh., Fürth.
94 Vogel, G., Fürth.
95 Weghorn, J. G., Fürth.
96 Berlin, J. W., Fürth.
97 Heilbronn, Leop., Fürth.
- 98** Underberg, Albrecht H., Rheinberg.—Hollow glassware. ²¹⁵
- 99** Greiner, Elias, Nephew's Son, Lauscha, near Sonneberg.—Enameling colors. ²¹⁶
- Furniture and Objects of General Use in Construction and in Dwellings.**
- 100** Friedrich, O. B., Dresden.—Fine furniture. ²¹⁷
- 101** Gutte, Louis, Görlitz.—Wood carving. ²¹⁷
- 102** Kimpel, Martin, Breslau.—Fine furniture, etc. ²¹⁷
- 103** Schöttle, Georg, Stuttgart.—Furniture. ²¹⁷
- 104** Stövesandt & Kollmar, Carlsruhe.—Fine furniture. ²¹⁷
- 105** Turpe, A., jr., Dresden.—Furniture. ²¹⁷
- 106** Völker, Otto, Berlin.—Carved furniture. ²²⁶
- 107** Tenner, A. B., Eisfeld.—Wooden blinds. ²¹⁷
- 108** German Sewing Machine Factory, Frankfort-on-Main. Ship furniture for the prevention of sea-sickness. ²¹⁷
- 109** Neuhausen, J., Berlin.—Billiard table. ²¹⁷
- 110** Bahse & Haendel, Chemnitz.—School desk and bench. ²¹⁷
- 111** Mayer's Art Institution for the Manufacture of Church Furniture and Decorations, Munich.—Wooden statues and altars. ²¹⁷
- 112** Magnus, G., & Co., Berlin.—Billiard balls. ²¹⁷
- 113** Friedrich, Hch. Ottm., Beierfeld, near Schwarzenberg.—Spoons. ²¹⁸

SMITH & WESSON,

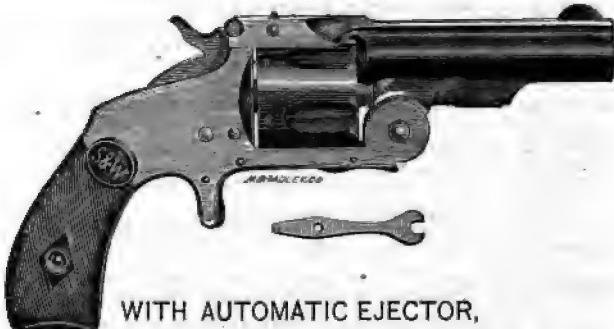
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\$150,000 UNITED STATES Six Per Cent. Loan, 1897,	\$185,250 00
184,000 STATE OF PENNSYLVANIA Six Per Cent. Loans,	205,540 00
325,000 CITY OF PHILADELPHIA Six Per Cent. Loans (exempt from Tax),	350,575 00
250,000 STATE OF NEW JERSEY Six Per Cent. Loans (1880 to 1902),	268,460 00
100,000 CITY OF PITTSBURGH Seven Per Cent. Loans,	107,000 00
100,000 CITY OF BOSTON Six Per Cent. Loans,	107,000 00
20,000 PENNSYLVANIA RAILROAD First Mortgage Six Per Cent. Bonds,	20,800 00
25,000 WESTERN PENNA. RAILROAD MORTGAGE Six Per Cent. Bonds (Penn. R. R. Guarantee),	19,500 00
44,000 STATE OF TENNESSEE Six Per Cent. Loan,	20,680 00
19,000 PENNSYLVANIA RAILROAD COMPANY, 380 SHARES STOCK	19,380 00
6,050 NORTH PENNSYLVANIA RAILROAD COMPANY, 121 SHARES STOCK,	6,413 00
5,000 CENTENNIAL BOARD OF FINANCE, 500 SHARES STOCK,	5,000 00
40,000 AMERICAN STEAMSHIP COMPANY Six Per Cent. Bonds (Penn. R. R. Guarantee),	29,600 00
271,950 LOANS ON BOND AND MORTGAGE, first liens on City Properties,	271,950 00
\$1,542,000 PAR.	COST, \$1,542,718 44
MARKET VALUE.	\$1,617,148 00
REAL ESTATE at Philadelphia and Pittsburgh,	120,000 00
BILLS RECEIVABLE for Insurances made,	213,574 55
BALANCES DUE AT AGENCIES—Premiums on Marine Policies—Accrued in- terest and other debts due the Company,	67,113 28
STOCK AND SCRIP, etc., of Sundry Corporations, \$17,043.	6,789 00
CASH—On deposit in Banks,	\$175,531 46
Loaned on call with collaterals,	120,000 00
In Office,	839 84
	\$296,371 30
	\$2,320,996 13

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HENRY LYLBURN, Secy.

HENRY BALL, Asst. Secy.

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 137 Rosenberg & Cohen, M. Gladbach.
 138 Schlahorst & Brüel, M. Gladbach.
 139 Everling, Carl, & Co., M. Gladbach.
 140 Ercklentz & Reuter, M. Gladbach.
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 145 Wolff, Fr., M. Gladbach.
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302 Stief, J., Nuremberg.
303 Söhlein, H., Nuremberg.
304 Strobel, J. P., Nuremberg.
305 Baudenbacher C., Nuremberg.
306 Kithil, A., Nuremberg.
307 Uebelacker L., Nuremberg.
308 Hess, Math., Nuremberg.
309 Schradin, A. F., Fürth.
310 Fischer, J. G., Erlangen.
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319 Pruckner, D. Munich.
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371	Kurzhalss, Julius, Tetschen-on-Elbe.—Fruit syrups. 659	
372	Schadek, Franz I., Vienna.—Bonbons. 661	

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- 1 Guyot-Lupold, A., Locle, Ct. Neuchâtel.—Chemical products, artificial black diamond, diamantine, powder of rubies, enamels for jewelry. 200
- 2 Ruffier-Casper, Nicolas, Samaden, Ct. Graubünden.—Artificially crystallized alumina, corundum, sapphire, ruby. 200
- 3 Zeslein & Müller, Basle.—Argal, silk waste, and fabrics of silk waste. 200
- 4 Amblet & Poncelet, Geneva.—Oil for watches and instruments of precision. 201
- 5 Brunschweiler, Traugott, St. Gallen.—Caseum for calico printing, caseum-glue for cold glueing. 201
- 6 Vaucher, L., Peseux, near Neuchâtel.—Animal oil for chronometers and fine watches. 201
- 7 Bindschedler & Busch, Basle.—Raw materials for the manufacture of dyes, aniline dyes, artificial alizarine. 202
- 8 Brunschweiler & Son, St. Gallen.—Printing inks, inks for Morse & Hughes' apparatus, extracts of ink in powder. 202
- 9 Durand & Huguenin, L., Basle.—Naphthaline, resorcin, fluoresceine, cocaine, phthaline and solutions, sefranine, galleine, ceruleine, steam blue, etc. 202
- 10 Bühlér, Emile, Neuchatel.—Hair regenerator, pomade, balsam, tooth-water, quinine-water. 203

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- 11 Collin, Ch., Derendingen, Ct. Solothurn.—Watch glasses. 214

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- 12 Böhme, F., & Co., Winterthur, Ct. Zurich.—Gilt and polished cornices and frames for pictures, mirrors, photographs. 220

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- 14 Brunner, A., Männedorf, Ct. Zurich.—White and colored bed-covers. 230
- 15 Gujer-Brunner, Uster, Ct. Zurich.—White and colored tricot bed-covers and table-cloths. 230
- 16 Oetiker, M. R., Männedorf, Ct. Zurich.—White and colored cotton bed-covers and table-cloths. 230

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- 19 Wallenstadt Fancy Cotton Goods Mills, Wallenstadt, Ct. St. Gallen.—Fancy cotton goods. 231
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- 21 Hanhart-Solivo, J., Dietikon, Ct. Zurich.—Cambrics, handkerchiefs, shawls, chintzes. 232
- 22 Azmoos Weaving Mills, Azmoos, Ct. St. Gallen.—Figured cotton goods. 232
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- 25 Siegenthaler, Sl., Enggistein, near Worb, Ct. Berne.—Boots and shoes of felt with and without wooden soles, felt soles, felt tablets for watch-makers, filtering bags, felt trimmings. 235
- 26 Ernst, Ferdinand, Winterthur, Ct. Zurich.—Goods of wool and mixtures of wool. 238
- 27 Schnyder, J. J., Wädenswil, Ct. Zurich.—Worsted horse-hair and fibre for mattresses and upholstery, horse-tails, bristles. 240

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- 28 Baumann, senior, & Co., Zurich.—Silks. 245
- 29 Baumann & Streuli, Horgen, Ct. Zurich.—Silks. 245
- 30 Dufour & Co., Thal, Ct. St. Gallen.—Silk bolting-cloth, silk grit-gauze. 245
- 31 Egli & Sennhauser, Zurich.—Silk bolting-cloth, middlings purifiers. 245
- 32 Frey-Feer, J., & Co., Aargau, Ct. Aargau.—Silk ribbons, faille, cord-edged taffetas, sarsonets, listons, satins. 245
- 33 Heidegger, Wegmann, & Co., Seefeld, Zurich.—Silk bolting-cloth. 245
- 34 Homberger, Gebrüder, Wetzwikon, Ct. Zurich.—Silk bolting-cloth. 243
- 35 Jansen, Bodek, & Hertz, Riebach, near Zurich.—Silks and satins. 245
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- 48 Bourquin, C. F., Cormondrèche, near Neuchâtel.—Wool hosiery, jackets, and waistcoats.** 250
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- 50 Hess, Gebr., Amriswil, Ct. Thurgau.—Colored shirts and over-shirts.** 250
- 51 Huggenberger, U., Frauenfeld, Ct. Thurgau.—Hosiery.** 250
- 52 Meyer-Wässpi & Co., Altstetten, near Zurich.—Knitted under-garments.** 250
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- 97** Schneider, C. F., Geneva.—Compli-cated pocket-knives. 280
- 98** Bürgin, Gebr., Schaffhausen.—Up-holsterers' nails. 280

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- 2** Desespringalle, A., Son, Brussels.—Chemicals for medicine, the arts, and painting. 200
- 3** Meeus, M. & J., Antwerp.—Refined sulphur. 200
- 4** Solvay & Co., Couillet, near Charleroi.—Chemicals, soda-salt. 200
- 5** Vandervelde, J. S., Lebbeke, East Flanders.—Powder for the removal of the wheat disease. 200
- 6** Des Cressonnières (widow) & Son, Molenbeek, St. Jean, near Brussels.—Toilet soap. 201
- 7** Goossens & Voets, Wavre(Brabant).—Toilet soaps. 201
- 8** Staes, Sproelants, Termonde, East Flanders.—Linseed, rape-seed, hemp-seed, cotton, and other oils. 201
- 9** Botelberge, Gustave, & Co., Melle, near Ghent, East Flanders.—Ultramarine. 202
- 10** Gilkinet, C. J., Ensival, near Verviers.—Cache-épouil or special ink to point out the defects on cloth and dye stuffs. 202
- 11** Lummerzheim, M. H., & Co., Wondelgem, near Ghent, East Flanders.—Bituminous and re-asphaltic roof and ship sheathing paper, lampblack. 202
- 12** Offergeld Bros., Forest, near Brussels.—Red, brown, and chestnut iron paint. 202
- 13** Planche, Edouard, Son, Laeken, near Brussels.—Writing ink. 202
- 14** Planche, Melchior, Ixelles, near Brussels.—Writing ink. 202
- 15** Singer, Max, Tournai (Hainaut).—Aniline products for dyes extracted from coal-tar, etc. 202

- 16** White Lead and Iron Paint Joint Stock Co., Anderghem, near Brussels.—White lead, iron paint, mastics. 202
- 17** Van der Velden, Leopold, Liège.—Writing, glossing, and indelible ink, liquid glue, etc. 202
- 18** Van Laer, Guillaum, Verviers.—Dyers' practical guide, mordant processes. 203
- 19** Marbaix, Auguste de, Antwerp.—Aromatic liquor, Anvers water, essential oil, caraway essence, cedar essence, Florentine iris and oil of cloves. 203
- 20** Cooppal & Co., Wetteren, East Flanders.—Charcoal, sulphur, powder and cartridges. 204

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- 23** Seilles lez Andenne and Bouffioulx Joint Stock Co. of Refractory Products and Plastic Clay, Seilles, near Andenne, Province of Liège.—Burnt refractory earthenware, brick for gas furnaces, etc., gas retorts, refractory plastic clay. 207
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- 25** Wingender Bros., Chokier, near Liège.—White and colored clay pipes. 210
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- 27** Andris, Lambert, & Co., Marchienne-au-Pont, near Charleroi (Hainaut).—White window and heavy muslin glass. 214
- 28** Baudoux & Co., Charleroi.—White and colored window and unpolished and corrugated muslin glass, with variegated rosettes engraved and cut. 214

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- 29 Baudoux, Eugene & Jonet, Lodelinsart.**—Colored and fancy window glass. 214
- 30 Bennett & Bivort, Jumet, near Charleroi.**—Window glass. 214
- 31 Bougard, A., Le Brun, H., & Co., Roux, near Charleroi.**—Window glass. 214
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DENMARK.—STATISTICAL PREFACE.

DENMARK is situated between $53^{\circ} 23'$ and $57^{\circ} 44' 50''$ north latitude, and $8^{\circ} 5'$ and $12^{\circ} 45'$ east longitude, excepting the small island of Bornholm in the Baltic, about ninety miles east of Seeland, which lies in 15° east longitude. Denmark is bounded on the north by the Skager Rack, a gulf of the North Sea; on the east by the Cattégat, the Sound, the Baltic, and Mecklenburg-Schwerin; on the south by the Elbe; and on the west by the North Sea, which the Danes call the "Western Ocean."

The kingdom of Denmark has an area of 14,553 English square miles, and a population (in 1874) of about	1,860,000
Faroe Islands,	128,000
Iceland,	}
Greenland,	}
Danish possessions in the West Indies,	1,988,000
Total,	1,988,000

The chief pursuits are agriculture, cattle-breeding, navigation, and fishing, about one-half of the population being engaged in these industries.

The annual yield of grain may be calculated at about 100,000,000 bushels, beside 200,000,000 barrels of potatoes, beans, etc. About three-fourths of the whole country is under cultivation. The raising of horses and cattle is quite an important interest; the statistics of live stock are, approximately, as follows: horses, 350,000; cattle, 1,250,000; sheep, 1,900,000; hogs, 450,000.

The exports consist mainly of grain, flour, horses, cattle, hogs, meat, pork, butter, wool, hides and skins, beer, brandy, train oil, etc. The principal imports are iron, coal, salt, sugar, coffee, tea, wood, cotton cloth, tobacco, rice, etc.

Of manufactures, the most important are china ware, terra cotta, tiles, crockery, glass, tobacco, linen, cloth, paper, and soap. There are large woolen mills, sugar refineries, iron foundries, machine shops, dockyards, distilleries, tanneries, etc.; flour mills can be found in all sections of the country. The commerce is not inconsiderable, and Danish joiners' work, gold and silver ware, watches, gloves, terra cotta, etc., find ready sale abroad.

The merchant navy consisted, in 1875, of 2766 sailing vessels of 183,740 registered tons; 114 steamships of 24,323 registered tons, making a total of 2880 vessels of 208,-063 registered tons.

The national wealth of Denmark is estimated at 4500 millions of crowns,* of which 3400 millions is real estate and 1100 millions capital, or about 2200 crowns to each individual.

In the 350 savings banks of the country, there were deposited, at the end of 1874, 194,308,902 crowns.

The army numbers, in all, 52,000 men. The navy consists of three iron-clad frigates and eight iron-clad corvettes, carrying 79 guns; three frigates, three corvettes, and five schooners, carrying 136 guns; twelve iron gunboats, carrying 17 guns. Also, transports, etc.

The budget for 1876-77 estimated the revenue at 50,008,843 crowns against an expenditure of 46,885,045 crowns. The public debt, April 1st, 1876, was 181,117,700 crowns against 262,034,296 crowns in 1869. The debt has, in five years, been reduced by more than 80,000,000 crowns.

(The foregoing statistics are furnished by the Danish Commission.)

* The Danish crown = 26 4-5 cents, gold.

The length of railways in the kingdom, at the end of 1874, was 1024.5 kilometres, of which 665 belonged to the State and 359.5 to companies.

The work of the post office for the year 1873-74 was 16,487,777 letters, and 15,134,812 newspapers.

The length of telegraph lines, 2545 kilometres; length of wires, 7049 kilometres; number of offices, 174; messages in 1874, 762,609.

Elementary education is widely diffused in Denmark, attendance at schools being obligatory from the age of seven to fourteen. Instruction is furnished gratuitously in the public schools to children whose parents cannot afford to pay for their teaching. Besides the university of Copenhagen, there are thirteen public gymnasias in the principal towns of the kingdom, which afford a classical education, and under them are a large number of middle schools, for the children of the trading and higher working classes. Instruction at the public expense is given in the parochial schools, of which there were, in August, 1869, 28 in Copenhagen, 132 in the towns, and 2780 in the rural districts.

Denmark is a constitutional monarchy. The people are efficiently represented, and have a voice in all public matters. The press is virtually free, and only answerable to law. The national assembly consists of the Folksthing and Landsthing, and is invested with very extensive powers; it meets annually for two months, but the deputies are elected triennially, and receive a fixed allowance during their sittings. The several colonies are governed by governors or high bailiffs, nominated by and alone responsible to the crown. The king has a privy council, in which there are associated with him the heir-apparent and eight members.

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DENMARK.

(South of Nave, Columns 11 to 13.)

COLLECTIVE EXHIBIT.

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- 1 Aalborg Chemical Works, Aalborg.—Bicarbonate and carbonate of soda. 200
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3 Guldborg, C. Hoegh, Copenhagen.—Varnish, and wood polished with it. 208
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5 Meyer & Henckel, Copenhagen.—Butter and cheese coloring, cheese rennet extract, varnishes. 202
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SWEDEN.

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 - 3 **Eurenius & Svalander, Stockholm.**—Chemicals. 200
 - 4 **Friestedt, A. W., Stockholm.**—Chemicals. 200
 - 5 **Gullbergs, Theod., Stock Co., Göteborg.**—Sulphuric acid. 200
 - 6 **Liljeholmens Stearine Manufacturing Stock Co., Stockholm.**—Stearine candles, oleine, glycerine, and stearine. 201
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2	Salinella, Baron Michele, Nicosia, Catania.—Rock salt.	200	22	Catanzaro, Giuseppe, Termini, Pa- lermo.—Licorice paste.	200
3	Musumeci, Gulli Gaetano, Catania. —Licorice.	200	23	Lancia di Brolo, Duke Federigo, Palermo.—Sea salt.	200
4	Giacomazzi, Favare Salvatore, Tra- pani.—Sea salt.	200	24	Fonzo, Domenico, Catania.— Cream of tartar.	200
5	Giacomazzi, Rocco, Trapani.— Licorice.	200	25	Di Mauro, Francisco, Catania.— Cream of tartar.	200
6	Martorana, Paladino S., Trapani.— Sea salt.	200	26	Scuderi, Giuseppe, Catania.— Cream of tartar, zamba.	200
7	Mazullo, Cav. Agostino, Mandanui, Messina.—Rock salt.	200	27	Rampazzini, Frederico, Milan.— Sulphur and chemicals.	200
8	Pirrone, Antonino, of Gaetano, Mes- sina.—Licorice.	200	28	Solinas, Arras Giuseppe, Sassari.— Olive oil.	201
9	Labonia, B. G., Naples.—Lico- rice.	200	29	Oneto, Agostini, & Co., Sampier- darena, Genoa.—Soap.	201
10	Romano, Gaetano, Palermo.— Salt.	200	30	Agostini Della Seta, Count Alfredo, Pisa.—Olive oil.	201
11	Ferrino, Cesare, Turin. <i>a</i> Nitrate.	200	31	Cenami, Count Bartolomeo, Lucca. Olive oil.	201
	<i>b</i> Colors in powder and paste.	202	32	Mingori, Vincenzo, Lucca.— Olive oil.	201
12	Baroncelli, Baldassarre, Cinciano, Sienna.—Bicarbonate of potassium and sodium.	200	33	Tellini, Vinnoco, Calci, Pisa.— Olive oil.	201
13	Borelli, Luigi, late Tommaso, Asti, Alexandria.—Cream of tartar, acids.	200	34	Tellini, Dario, & Co., Cascina, Pisa. —Olive oil soap.	201
14	Reimandi, Giuseppe, Acqui, Alex- andria.—Cream of tartar, tartaric acid.	200	35	Bonei, Casuccini Ottavio, Sienna. —Olive oil.	201
15	Gentili, Grassi, late Giuseppe, Pa- dua.—Cream of tartar.	200	36	Contucci, Eustachio, Montepu- liciano, Sienna.—Olive oil.	201
16	Sbertoli, Giuseppe, late Domenico, Genoa.—Carbonate of lead.	200	37	Lanza Brothers, Turin.— Stearine, candles, soap.	201
17	Candiani & Biffi, Milan.— Acids and chemicals.	200	38	Rinaldo, Raffaele, Salerno.— Olive oil.	201
18	Emmanuele, Francesco, Catania.— Cream of tartar.	200	39	Guglielmini, Andrea, Salerno.— Olive oil.	201
19	Grimaldi, Giovanni, Paterno, Sicily. —Extract of licorice.	200	40	Virgili, Angelo, Vacone, Perugia cy.—Olive oil.	201
	Pastore, Gio., late Filippo, Catania. —Juice of licorice.	200	41	Rosselli Del Turco, Pier Francesco, Florence.—Olive oil.	201
			42	Capponi, Conti Brothers, Florence. —Olive oil.	201

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54	Calamari, Pietro, Milan.—Soaps.	201
55	Gianoli Brothers, Milan.—Soaps.	201
56	Giuffrida, Leotta Giovanni, Catania.—Oil of sweet almonds.	201
57	Merlo, Bar. i Vincenzo, Palermo.—Olive oil.	201
58	Sciacqua della Scala, Baron, Palermo.—Olive oil.	201
59	Martines, Filippo, Palermo.—Olive oil.	201
60	Inguaggiato, Baron Croce, Palermo.—Olive oil.	201
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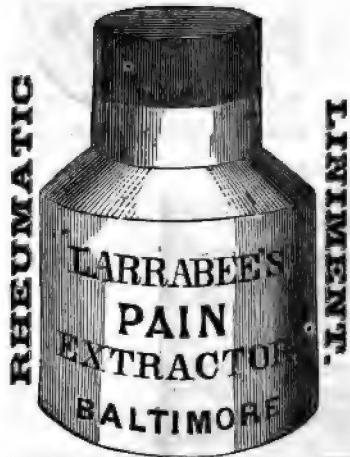
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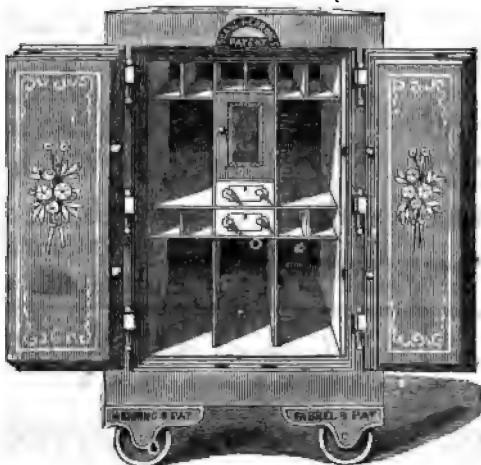
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EGYPT.—STATISTICAL PREFACE.

THE territories under the rule of the sovereign of Egypt, including those on the Upper Nile and Central Africa, are vaguely estimated to embrace an area of 4,777,830 square kilometres, and to be inhabited by a population of 16,952,000, of whom about one-third are in Egypt proper. The following tabular statement gives the area and population of the various divisions of the kingdom, and its recent annexation, according to government estimate, of the year 1875:

DIVISIONS.	AREA, SQ. KILOMETRES.	POPULATION.
Egypt proper,	550,630	5,252,000
Nubia,	864,500	1,000,000
Former kingdom of Ethiopia,	2,918,000	5,000,000
Darfur, and other annexed territories, . . .	444,700	5,700,000
	4,777,830	16,952,000

The great physical peculiarity of Egypt is the absence of rain, the land being only irrigated by the annual overflow of the Nile. The climate is remarkably mild and sound, especially south of the Delta; and in the desert, from Cairo to Alexandria, the air contains more moisture than to the south. From the middle of August to December, west winds prevail; east winds from that time till March; after that, unhealthy south winds or Khamsin till June; and from June till August the north or Etesian winds. Earthquakes are occasionally felt, and the temperature varies from 84° F. to 32°. The most remarkable phenomenon is, however, the regular increase of the Nile, fed by the fall of the tropical rains, which commence in 11° north latitude, in the spring; and falling first into the White, and then Blue Nile, reach Egypt in the middle, and the Delta in the end of June. In the middle of July, the red water appears, and the rise may be dated from that time it attains its maximum at the end of September, and begins to decline visibly in the middle of October, and subsides to its minimum in April. At the end of November, the irrigated land has dried, and is sown, and is covered with green crops, which last till the end of February. In March is the harvest. The state of the Nile, in fact, marks the season more accurately than the variation of temperature. Egypt is by no means remarkably healthy, as, in addition to the visitations of plague and cholera, ophthalmia, diarrhoea, dysentery, and boils often prevail, and European, and even Nigritic races cannot be acclimatized.

Many of the European trees and plants are found in Egypt; the date-palm, the doon-palm, the sycamore, acacias, tamarisks, etc., are among its more peculiar botanical productions; also the papyrus, which anciently supplied material for paper, and the lotus or water-lily of the Nile. The extensive culture of papyrus has been, in modern times, replaced by that of the sugar-cane, cotton, indigo, and tobacco, and the plant has almost disappeared. Gourds and melons have always abounded. To the wheat and barley of antiquity have been added maize and durra. Egypt is very deficient in timber trees. The rocks of Egypt afforded the stones used in its edifices and sculptures; granite, syenite, basalt (at Assouan), breccia (in the Cossier Rood), porphyry (from the quarries of Gebel Doshan, opened in the

reign of the Emperor Claudius), sandstone, and limestone. Alabaster (found at Cel-el-amarna) has been used from the earliest periods to the present day. Emeralds are produced by the mines of Gebel Zabara; salt, natron, and—since 1850—sulphur, are among the other mineral productions of Egypt.

Egypt proper is divided into three great districts, namely: Masr-el-Bahri, or Lower Egypt; El-Wustani, or Middle Egypt; and El-Said, or Upper Egypt—designations drawn from the course of the river Nile. These three geographical districts, subdivided into eleven administrative provinces, had, according to an enumeration made by the government in March, 1872, a rural population of 4,603,660, and an urban population of 648,340, dispersed over six towns, as follows:

Cairo,	349,983	Tanta,	28,500
Alexandria,	212,054	Rosetta,	15,002
Damietta,	29,383	Suez,	13,498

The Khedive is absolute sovereign or king. The administration is carried on by a Council of State of four military and four civil dignitaries.

The revenue of Egypt for the financial year ending September 10th, 1874, was calculated in the official budget at 1,982,394 purses,* the expenditures at 1,763,128 purses.

The public debt of Egypt consists chiefly of foreign loans. These are divided into two classes, namely, general loans, contracted by the State, and loans of the Khedive, as greatest of land-owners, raised on his individual responsibility.

The following table shows the actual state of the debt:

Funded debt,	£49,270,380
Floating debt,	7,600,000
	<hr/>
	£56,870,380
Personal debt of the Khedive,	13,174,360
	<hr/>
Total,	£70,044,740

The army is raised by conscription. It consisted, in January, 1875, of four regiments of infantry, of 3000 men each; of a battalion of chasseurs, of 1000 men; of 3500 cavalry, 1500 artillery, and two battalions of engineers, of 1500 each. There are, besides, two regiments of black troops, of Sudan, numbering 5000 men.

The Egyptian navy comprised, in 1875, 7 ships of the line, 6 frigates, 9 corvettes, 7 brigs, 18 gunboats and smaller vessels, and 27 transports.

The commerce of Egypt is very large, but consists, to some extent, of goods carried in transit. The total exports for the year 1873 amounted to about 1,450,000,000 piastres the imports to about 600,000,000 piastres. The merchant navy, in 1872, comprised 585 vessels of a total burthen of 59,874 tons.

The commerce of the world has been greatly benefited by the Suez Canal, which connects the Mediterranean with the Red Sea. Starting from Port Said, forty miles east of the Damietta mouth of the Nile, it proceeds across the isthmus and through lakes Menzaleh, El Ballah, and Timsah, on the shores of which latter stands the new town of Ismailia, and through the Bitter lakes to Suez. Its total length is 92 miles. Its actual width over the greater part of its length, does not permit of two vessels passing or crossing each other in the canal itself; but there are numerous sidings, by which vessels are enabled to cross one another; vessels measuring 430 feet in length and drawing 25 feet 9 inches of water have passed safely through the canal. Its actual cost, according to the report for the year 1875, was £17,518,729, exclusive of £1,360,000 bonds issued to pay for coupons on shares in arrear during part of the period of construction.

* 1 purse = 500 piastres = \$25 gold

The number and tonnage of vessels which passed through the canal in each of the five years, 1870 to 1874, were as follows:

YEAR.	VESSELS.	TONNAGE.
1870,	491	436,618
1871,	761	761,875
1872,	1082	1,439,169
1873,	1171	2,085,270
1874,	1264	2,423,672

Egypt had, on the 1st of January, 1875, a railway system of a total length of 955 English miles, open for traffic, with 502 miles under construction. With the exception of a short line of about 5 miles, all of the Egyptian railways are State property.

The telegraphs of Egypt were, at the commencement of 1875, of a total length of 4094 miles, the length of wires being 8690 miles. The whole of the telegraphs are State property.



Commission from EGYPT to the International Exhibition:

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EGYPT.

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COLLECTIVE EXHIBIT.

Mining.—Manufactures.

Minerals, Ores, Building Stones, Mining Products.

1 National Museum.	
a Rough gold dust, petrified wood.	.00
b Rough, hewn, and polished marbles, alabaster, and limestones.	102
c Crude rock of lime, cement, burned lime, and plaster.	103
d Clays and materials for manufacturing porcelain and faience.	104
e Sand.	106
f Soil and water.	107

Metallurgical Products.

2 National Museum.	
a Solid rough gold pieces.	110
b Iron.	111

Chemical Manufactures.

3 National Museum.	
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b Prepared oils, solid and liquid.	201
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Ceramics, Pottery, Porcelain, etc.

4 National Museum.	
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b Porcelain tiles.	208
c Egyptian earthenware from Upper Egypt.	210
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b Porcelain of all kinds.	213

Furniture and Objects of general use in Construction and in Dwellings.

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--	-----

7 National Museum.

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8 National Museum.	
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c Woven figured silk goods.	246
d Fancy silk and velvet ribbons.	248

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TUNIS.—STATISTICAL PREFACE.

TUNIS, a country of Africa, and one of the Barbary States, is bounded on the north by the Mediterranean, on the west by Algeria, on the south by the Desert, and on the east by Tripoli and the Mediterranean. Its greatest length from north to south is about 440 miles; its average breadth, 160; area, upwards of 75,000 square miles; population, according to latest authorities, 1,200,000. Tunis is traversed by branches of the great Atlas range, which, in fact, has its proper termination here. The northern coast is rocky and steep, with numerous bays, of which the largest is the Gulf of Tunis; and two of its promontories, Capes Blanco (Ras-el-Abid) and Bon, are the most northern in Africa. The eastern coast, on the other hand, is flat, sandy, and infertile, like that of Tripoli, but has two large gulfs, Hammamet and Cabes. The southern part of Tunis belongs to the desert steppe known as Belud-el-Jerid. There is only one fresh water lake of any consequence, that of Biserta or Bensart, near the north coast. The brooks and torrents of Tunis either lose themselves in the sand, or find their way to the sea after a short course. None are navigable. The longest is the Mejerdah, which flows in a generally northeastern direction into the Gulf of Tunis. Other streams are the Ved-el-Milianah and the Ved-el-Kebir. There are several mineral springs in the country. The climate of Tunis is fine, and the soil exceedingly fertile, so that, in spite of a very poor knowledge of agriculture, wheat, barley, maize, dhurra, pulse, olives, oranges, figs, grapes, pomegranates, almonds, and dates are abundantly produced. The culture of oil is more attended to, and is very lucrative. Great herds of cattle are fed on the plains; the sheep are famous for their wool; and the horses and dromedaries are no less celebrated. The chief mineral products are sea-salt, saltpetre, lead ore, and quicksilver. In the vicinity of the sea-coasts, considerable manufacturing and trading industry is manifested, more particularly in the cities of Tunis and Susa. Wool, olive oil, wax, honey, soap, hides, coral, sponges, dates, wheat, and barley are the principal exports. Cloth, leather, silks, muslins, spices, cochineal, and arms are transported by means of caravans to the interior of Africa, whence in exchange are brought for exportation to European and other countries, senna, gums, ostrich feathers, gold, and ivory. Total exports in 1874, valued at 28,815,358 francs; imports, 25,193,785 francs. During the same year the entries at the port of Tunis (Goulette) were 779 vessels, 116,927 tons burthen; departures, 768, of 108,031 tons burthen.

The Bey of Tunis receives his investiture from Constantinople; without the Sultan's authority he can neither declare war, conclude peace, nor cede territory; the Sultan's name must appear on all the coinage; the army must be at the disposal of the Sublime Porte. In internal matters the power of the Bey remains absolute.

The Tunisian army comprises about 4000 regulars, 5000 Karouglis (descendants of the Turkish janissaries), 5000 Zouaves (infantry), and 1500 spahis (cavalry). In

time of war the irregular cavalry can be increased to about 3000. The navy consists of two vessels, carrying 10 guns, and crews aggregating 250 men. The merchant navy comprises 300 vessels, ranging from 10 to 150 tons burthen.

There are about forty miles of railways in operation. There is at Tunis, a French, and also an Italian post office.

French telegraph lines connect the city of Tunis with various towns within the borders of the regency, as well as with Algiers and Europe.

Commission from TUNIS to the International Exhibition:

HIS EXCELLENCY SIDI HEUSSIM, General of Division, Minister of Instruction and Public Works, President.

G. H. HEAP, U. S. Consul, Resident Commissioner.

TUNIS.

(*South of South Avenue, Columns 10 to 14.*)

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ORANGE FREE STATE.—STATISTICAL PREFACE.

THE republic of the Orange Free State is situated on the northeast boundary of Cape Colony, and is bounded as follows: On the west and northwest by the territory claimed for the chief, Nicholas Waterboer, under the name of Griqualand West, and by Betschuanaland, respectively, on the north and northeast by the Transvaal republic, on the east by the colony of Natal, and on the south by British Basutoland, the Native Reserve Lands, and the Cape Colonial divisions of Albert and Colesberg.

Its area is roughly taken to be about 70,000 square miles, but no accurate computation has hitherto been made, and the probability is that the actual extent will be found considerably greater.

The country consists of extensive undulating plains, which slope from the great Watershed, northward and westward, respectively, to the Vaal and Orange rivers, and is intersected at varying intervals by the Wilge, Rhenoster, Valsch, Vet, and Riet rivers, all of which empty their waters into the Vaal river, and the Caledon river, which empties into the Orange river. The courses of the large rivers are extremely tortuous and hollow, their banks being for the greater part very precipitous, and generally lined with water-willow, mimosa, and other trees indigenous to this country. The streams are usually fordable; during the rainy season, however, they become swollen and impassable.

The Orange Free State is, for the greater part, a grazing country, and though agriculture is everywhere attended to on a larger or smaller scale, according to the natural capabilities of the farms, still it is chiefly in the southern and eastern districts that it is carried on as the principal source of production, and it is almost exclusively from the districts of Rouxville, Lady Brand, Winburg, Bethlehem, and Harrismith, that grain is brought into the markets of the other districts.

Neither is it altogether without mineral wealth, as diamonds, rubies, and other precious stones have been discovered in various parts of the country. Coal also of a very good quality, and in paying quantities, has been found in the Winburg district, as well as on farms in the Lady Brand and Harrismith districts.

In the early days of this republic the distribution of animal life was a subject of great interest, from the fact of the immense variety of wild animals inhabiting the country. Even now the lion still frequents some sections of it. But, owing to the advance of civilization and human industry, all the larger animals, as the elephant, rhinoceros, hippopotamus, and giraffe, have retreated far away. Upon its vast undulating plains, however, a large and splendid variety of the antelope tribe roams in countless numbers. The country being favorable for the rearing of horses, cattle, and woolled sheep, the number of the latter contained therein may be estimated by millions.

Birds abound in great variety, particularly those of the larger kinds, among which might be enumerated the ostrich, eagle, vulture, pelican, hawk, and various species of crane.

The staple articles of export from the Orange Free State are wool and skins, and of late years diamonds and other precious stones, while owing to the mining population in the disputed territories along the Vaal river, a large trade in grain and other agricultural produce has been productive of great wealth to the country.

From the same cause, although more indirectly, trade in all articles of import, such as ironware implements, and manufactures in woolen, cotton, and silk goods, and articles for consumption, either as necessities or luxuries, has received a great stimulus, and the commercial community is to all appearance in a healthy and prosperous condition.

The average height of the Orange Free State above the level of the sea is about 5000 feet, and the climate is generally salubrious. The winter here is cold but dry, the summer usually warm and moist, though droughts are sometimes experienced in the summer months. The air, however, is healthy and dry, as a rule, and this is particularly felt at Bloemfontein and its vicinity; consequently numbers of invalids suffering from pulmonary affections resort to Bloemfontein, and experience much benefit from a residence in this part of the country.

In other respects it has been noticed that the changes of the seasons are to a greater or less degree, according to their duration, accompanied by a greater liability to colds and fevers, generally of a typhoid type, and inflammatory affections, especially amongst children.

The government of the Orange Free State is republican, and its constitution vests the legislative powers in the Volksraad, the members of which are elected by their constituents for four consecutive years. The whole number of representatives (there being one for each chief town of a district, and one for each field cornetcy) is fifty-two. Of this number, the half retire by rotation every two years, and a new election takes place to fill up the vacancies.

The educational department of the country is only now receiving that vital attention which a subject of so vast importance to any country ought to have; and the legislature has only of late years been impressed with the absolute necessity of placing this department on the best possible footing. Accordingly, a fund is gradually being raised for educational purposes, which in 1876 will place at the disposal of the government an amount of £56,000.

Meantime, in accordance with an order made in 1872, an inspector of education has been appointed, who has already entered upon the task of remodeling the whole educational system. It is only right, nevertheless, to state that a government allowance of £90 a year has for years past been given to each district town, on condition of its subscribing at least one-half more, and attempts to establish good schools have everywhere been made by the district school committees, comprising the Landdrost, Dutch Reformed Church, and three elected members, with varying success in some places, but in others only to meet with failure, which is principally to be attributed to the defective system hitherto pursued.

The principal support hitherto afforded by the government consists in the liberal allowances made for the salaries of teachers in the Grey College; but owing to the short time that has elapsed since the arrival of one of them, and various other circumstances beyond the control of the government, the desired results are still to be looked for. Very praiseworthy efforts have also been made on behalf of education by the Anglican Church, in schools established at Bloemfontein and at Smithfield, and this latter has already shown very satisfactory results.

The revenue of the State, for the year 1872-73, was £112,040; the expenditure, during the same year, £102,142.

The government lands of the Orange Free State are still very considerable, though as nought compared with their original size, owing to the sales of farms which have been held from time to time. The value of fixed property of all kinds has increased greatly within the last few years. Even in the districts of Harrismith and Kroonstad, where land formerly was almost valueless, farms are now eagerly sought after, and change hands at very high rates. The average price of land throughout the whole State may now be fixed at 10s. per morgen. A rough estimate fixes the number of farms throughout the country as between 6000 and 7000. Fixed property changes ownership by registration. The population of the State is estimated at about 75,000 white, and 25,000 colored or native.

Commission from ORANGE FREE STATE to the International Exhibition:

CHARLES W. RILEY, Consul-General.

ORANGE FREE STATE.

(South of South Avenue, Columns 2 to 5.)

COLLECTIVE GOVERNMENT EXHIBIT.

Minerals, Native Utensils, Animal and Vegetable Specimens.

Diamonds in the rough, from the diamond fields of the Orange Free State.	100	Petrified wood.	60c
Diamondiferous soil, with a diamond in it.	100	Stuffed birds.	635
Copper and iron ore, chlorsastrolite, and magnesita.	100	Butterflies and other insects.	638
Coal.	101	Tusks of ivory.	652
Pebbles accompanying the diamond.	102	Gemsbuck, roorbuck, rietbuck, and hartebeeste horns.	652
Kaolin.	104	Koodoo cow hides.	652
Springbuck mats.	239	Hartebeeste and blesbuck skins, tanned.	652
Angora, blesbuck, and jackal crosses.	239	Shambucks, long and short.	652
Mohair, Angora goat hair, washed and unwashed white wool.	240	Rhinoceros hide flexible rods, reimes, thongs, and girdles.	652
Boots of native manufacture.	251	Ostrich feathers and eggs.	3
Pipes of native manufacture.	254	Bird plumage, natural.	653
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Harnesses and whips.	296	Flour, meal, wheat, and Kaffir corn.	657
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GRAND DUCHY OF LUXEMBURG.

COLLECTIVE EXHIBIT.

Cements, Clothing, Vegetable Products.

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2 Charles, Auguste, & Co., Bonnevoie, near Luxemburg.—Gloves.	251	6 Pauly, Bouthon, & Co., Distillery and Vinegar Manufactory.—Vinegar.	660
3 Mayer, Gabriel, Luxemburg.—Gloves.	251	7 Eichhorn, Gustav, Wormeldange.—Moselle wines.	660
		8 Nothing & Soupert, Limpertsberg, near Luxemburg.—Rose trees.	705

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MONTREAL.

CHINA.—STATISTICAL PREFACE.

THE following table gives the area and population of the various divisions comprising the Chinese empire :

	AREA IN ENGLISH SQ. MILES.	POPULATION.
China proper,	1,534,953	405,213,152
DEPENDENCIES.		
Mandchuria,	362,313	3,000,000
Mongolia,	1,288,035	2,000,000
Thibet,	643,734	6,000,000
Corea,	90,300	8,000,000
Lieukhien Islands,	2,310	
Liaotong,	2,982	1,000,000
Total,	3,924,727	425,213,152

China proper is included between $18^{\circ} 15'$ and $43^{\circ} 15'$ north latitude and 98° and $122^{\circ} 40'$ east longitude. Its coast-line exceeds 2500 miles, and its land frontier 4400 miles. It is divided into eighteen provinces, and includes the two large islands of Formosa and Hainan. The administration of the empire is parceled out into separate governments, corresponding with the provincial divisions, each of which has a complete organization, exchequer, army, and naval force of its own. Besides providing for the cost of its own administration, each province is required to remit annually to Peking a certain portion of its revenue to meet the expenses of the court, central government, and garrison of Peking, as well as to provide for exigencies arising in other provinces, and for the requirements of the garrisons in Turkestan, Mongolia, and Mandchuria, which are administered by military governors.

According to the latest reports, the imperial army comprises a total of 850,000 men, including 678 companies of Tartar troops, 211 companies of Mongols, and native Chinese infantry, a kind of militia, numbering 120,000 men. The native soldiers do not live in barracks, but in their own houses, mostly pursuing some civil occupation.

The Chinese are pre-eminent for their indefatigable industry. Of the immense territory peopled by them, there is scarcely a rood of arable ground that is not assiduously cultivated. Unfortunately, however, their husbandry is, to a great extent, nullified by the rude and ill-adapted implements employed therefor. Scientific agriculture is but slightly advanced in China, although the Chinese system of land irrigation is superior to that of any other people. As a manufacturing nation the Chinese are highly distinguished; porcelain originated entirely with them, and the art of spinning silk they also gave to the West. The lacquered ware produced in China, though very beautiful, must be considered inferior to that of Japan, but in the more minute arts of carving and inlaying, the Chinese have no superiors. Their ivory and mother of pearl industry is too well known to need description. Gunpowder, though a Chinese invention, is little manufactured, and that little of indifferent quality. Paper is ingeniously made of various materials; it is, in general, thin, silky, and highly absorbent of ink.

Chinese trade has the peculiarity of being, for the most part, internal, the country supplying most articles of subsistence or luxury, and is carried on by means of canal and river navigation. The principal exports are tea, porcelain, raw and spun silk,

sugar, rhubarb, embroidery, lacquered wares, and carved articles of domestic ornament. The imports consist mainly of cotton and woolen goods, opium, raw cotton, furs, and edible birds' nests, which form an expensive luxury, and are held in high esteem. The total value of commodities exported from China, in 1865, reached the figure of \$173,609,085, as against imports of \$238,504,520. Of the exports, tea is the chief, showing a total quantity of 223,679,182 pounds shipped. The export of raw silk for the same year aggregated 40,726 bales, and of cotton, 35,855,792 pounds.

The grand canal, about 700 miles in length, has greatly facilitated the internal trade of the country. China is traversed in all directions by 20,000 imperial roads, most of which are badly kept. There is a postal service, but of a very rude kind.

Education, as the high road to official employment, to rank, wealth, and influence, is eagerly sought by all classes. Literary proficiency commands everywhere respect and consideration, and primary instruction penetrates to the remotest villages. Self-supporting day-schools are universal throughout the country, and the office of teacher is followed by a great number of the *literati*. Government provides state examiners, but does not otherwise assist in the education of the people.

The Chinese executive system is based on those noteworthy competitive examinations which are intended to sift out from the millions of educated Chinese the best and ablest for the public service.

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MR. EDWARD B. DREW,	Commissioner of Customs.
MR. J. L. HAMMOND,	Commissioner of Customs.
MR. EDWARD CUNNINGHAM,	Assistant Commissioner,
MR. W. W. PARKIN,	" " "
MR. F. P. KNIGHT,	" " "

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JAPAN.—STATISTICAL PREFACE.

JAPAN proper comprehends four large islands, viz.: Niphon (the Japanese mainland), Sikok or Sikopf, Kiusiu, and Yesso, and extends from 31° to $45^{\circ} 30'$ north latitude. The empire of Japan includes about 3800 small islands and islets besides the four larger ones, and is situated between 26° and 52° north latitude, and 128° and 151° east longitude. It is bounded on the north by the Sea of Okotsk, on the east by the north Pacific Ocean, on the south by the eastern Sea of China, and on the west by the Sea of Japan. The islands of Japan appear to be of volcanic origin, and that part of the Pacific on which they rest is still intensely affected by volcanic action. Earthquakes occur very frequently in Japan, although certain parts of the country are exempt. Japan has been called the land of mountains: but though these are very numerous, and many of them volcanic, they are of moderate elevation, and rarely attain the limits of perpetual snow. The country generally is of moderate elevation, with fertile valleys, picturesque landscapes, and a coast indented with magnificent harbors; the soil is productive, rich in mineral wealth, and teeming with every variety of agricultural produce. Springs, lakes, and rivers are numerous; but the last, being sand-choked, are valuable chiefly for the purposes of irrigation.

Our knowledge of the climate of Japan is yearly increasing. June, July, and August are the months of rain, which sometimes descends in unceasing torrents. The months of October and November are the pleasantest and most genial of the twelve, when fine weather is enjoyed without the scorching heat of summer. The summers are very hot, and the winters in the northern parts almost Siberian; the thermometer rising to 96° in the shade in the former, and sinking to 18° below zero in the latter season. Alcock says: "The thermometer in the shade (during the summer) ranges from 70° to 85° , and averages 80° between the morning and the evening, while it is sometimes below 70° at night." Hurricanes and waterspouts are frequent; dense fogs hide the sun, sometimes for four or five days together; and about the change of the monsoons, typhoons and equinoctial gales frequently sweep the Japanese seas.

The following figures are furnished by the Japanese commission:

Area,	23,740 ris (the ri equals $2\frac{1}{4}$ miles).
Population.—Male,	16,891,729
Female,	16,408,946
Total,	33,300,675
Imports,	22,841,166.93 yens.*
Exports,	18,367,259.29 "
Revenue,	81,552,294. "
Expenditure,	79,881,820. "
Army,	42,073 men

The navy consists of 20 vessels, manned by 3757 men.

The country is rich in minerals, gold, silver, iron, sulphur, and especially copper abound. There are also large quantities of coal. Amongst the most remarkable of its vegetable productions is the camphor tree, the varnish or lacquer tree, the paper mulberry tree, the vegetable wax tree, the tea shrub, the tobacco plant, and the rice plant. The principal manufactures are those of silk and cotton. The internal trade is very extensive, and rigid regulations are in force to protect and encourage home industry. In the mechanical arts the Japanese have attained great excellence, especially in metallurgy, and in the manufacture of porcelain, lacquer ware, and silk fabrics. In some of these departments works are produced so exquisite in design and execution, as to more than rival the best products of Europe.

* The yen equals 99.7 cents gold.

The Japanese government is organized on a basis which is partly European. The Mikado is supreme in temporal and spiritual matters, but the work of government is carried on by the Great Council, which is divided into three sections, denominated Centre, Right, and Left. The Centre is composed of the Prime Minister, Vice Prime Minister, and five advisers. The left is made up exclusively of the Council of State, the functions of which are analogous to those of the French Conseil d' Etat, so far as the preparation and discussion of laws is concerned. The Right includes all the ministers and vice-ministers of eight departments into which the administration is divided. The ministers, either individually or united in a Cabinet, decide all ordinary questions; but points of real importance are reserved for the Great Council, presided over by the Mikado. The local administration in the provinces is in the hands of prefects, one of them residing in each of the 75 districts into which Japan is divided.

Education is very general in Japan. In 1871 a Ministry of Instruction was created, and as a result of its efforts, public primary schools are increasing rapidly, especially in the towns; but the movement is far more marked in the western provinces and on the coast than in the interior. Private schools are more abundant still, and any person being at liberty to establish them,—subject to a permission, which is always given,—they spring up with facility wherever wanted. In order to facilitate the acquirement of foreign languages, the government has engaged European professors, and has also sent, at public expense, a large number of students to America and Europe. The first line of railway, from Yokahama to Yeddo, 17 miles long, was opened for traffic on the 12th of June 1875, and other lines were in progress at that date.

The post office carried 17,095,842 letters in 1874. The number of post offices at that date was 3244.

Commission from the JAPANESE EMPIRE to the International Exhibition :

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HIS EXCELLENCY LIEUTENANT-GENERAL SAIGO YORIMICHI, Imperial Army, Vice-President.

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MR. FUKUI MOKOTO, Bureau of Agriculture and Industry.

MR. FRITZ CUNLIFFE OWEN, Attaché.

MR. TAWARA WAKICHIRO, Attaché.

J A P A N.

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HAWAII.—STATISTICAL PREFACE.

THE islands forming the kingdom of Hawaii are eight in number, exclusive of one or two small islets. The chain runs from southeast to northwest, and lies in the middle of the Pacific Ocean, in latitude 19° — 22° north, and longitude 155° — 160° west. Area 7400 square miles; population (1872), 56,897, of whom 2539 were Europeans. The names, with the areas, of the respective islands are: Hawaii (formerly Oghyhee), 4850 square miles; Maui, 750; Oahu, 700; Nau, 780; Molokai, 170; Lanai, 170; Nuahauf about 110; and Kahoolau, about 40 square miles.

Situated near the middle of the Pacific Ocean, about half the distance from San Francisco in North America that they are from Melbourne in Australia and Canton in China, the Sandwich Islands form an oasis in the middle of a wide ocean waste, and offer convenient stations for the refreshment and repair of the merchantmen and whalers that traverse the Pacific. They are of volcanic origin, and contain the largest volcanoes, both active and quiescent, in the world. The most prominent physical features of the group are the two lofty mountain peaks of Hawaii, Mauna Kea and Mauna Loa, each of which is 14,000 feet in height, or within 1860 feet of the loftiest of the Alps. Besides those two chief peaks, which stand apart from each other, and one of which is covered with perpetual snow, the island is traversed by other mountains, which give it a rugged and picturesque outline, and in some cases front the sea in bold, perpendicular precipices, from 1000 to 3000 feet in height. In general, the islands are lofty—the small islet of Lehua is 1090 feet high, and the upland regions of Kauai are, on an average, 4000 feet above sea level. Within the coral reefs, which, in single, and more rarely in double ridges, skirt portions of the coasts, sandy shores, leading up to rich pasture-lands, and occasionally to productive valleys, are frequently seen. Everywhere, however, the configuration of the surface betrays the volcanic origin of the islands. Extinct and partially active volcanoes occur in most of the islands. Kilauea, on the Mauna Loa mountain in Hawaii, the largest active volcano in the world, has an oval-shaped crater nine miles in circumference, and is 6000 feet above sea level. In the centre of this immense caldron is a red sea of lava, always in a state of fusion. At intervals, the lava is thrown to a great height, and rolls in rivers down the mountain sides. On Maui, the crater of Mauna Haleakala (House of the Sun), by far the largest known, is from 25 to 30 miles in circumference, from 2000 to 3000 feet deep, and stands 10,000 feet above sea level. Within this huge pit, about 16 basins of old volcanoes, whose ridges formed concentric circles, have been counted. Good harbors are few. The chief is that of Honolulu, in Oahu, with $22\frac{1}{2}$ feet of water in its shallowest parts. On the same island is Ewa, an immense basin, with 12 feet of water at low tides. During the

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19.	Catarrh, Acute or Chronic, Dry or Flowing	50
20.	Whooping-Cough, Spasmodic Cough	50
21.	Asthma, Oppressed, Difficult Breathing	50
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THE ORIGIN OF CO-OPERATIVE NEWSPAPER ADVERTISING.

Co-operative newspaper printing, as now practised, originated in Wisconsin twelve years ago. It is termed *co-operative* for the reason that one side of each of the newspapers is printed at a central office, and the paper sent in its half-printed state to the home office, where it is completed with editorials, local news, and other matter prepared by the editor or publisher. In December, 1846, the idea of co-operation, *with advertisements*, occurred to Mr. Aikens, while yet serving his time as an apprentice, in printing the message of President Polk on one side of a country newspaper of New England at Boston, and the other half being printed at the local office.

Mr. A. J. Aikens, a practical printer and business man, conceived the idea of reducing the cost of ready-printed paper, as it is now termed, to country publishers, by making an agreement with them to use a certain space in each of their papers for advertisements that he might procure. This plan of co-operation he put into practice twelve years ago, at the office of Cramer, Aikens & Cramer, Milwaukee. It at once became successful, leading to the establishment of co-operative newspaper printing-offices in Chicago, New York, St. Louis, Cincinnati, Memphis, St. Paul, and other places. There are now over two thousand newspapers printed upon the co-operative plan in the United States and Canadas, and the number is constantly increasing, it having more than doubled in the last five years. The enterprise is no longer an experiment, but an established success, and the system is one yielding manifold advantages to advertisers as well as to local publishers.

The American Newspaper Union

Is essentially national. The papers represented in it are located in all the States of the Union and in nearly five hundred county seats. They circulate over the whole area of the country from Maine to Colorado, distributing at least *one hundred copies every year to each square mile of the settled portions of the United States*.

Although, as a whole, the Union List is national, covering all sections, it is so made up of different members as to be susceptible of easy division into sections—East, Middle, West, South. The distribution of the papers is as follows :

New England	78	Illinois	117	Nebraska	15
New York	101	Michigan	86	Missouri	17
New Jersey	27	Wisconsin	98	Georgia	10
Pennsylvania	65	Tennessee	29	Alabama	32
Virginia	24	Kentucky	29	Louisiana	11
No. and So. Carolina	24	Minnesota	79	Mississippi	29
Ohio	122	Iowa	85	Other States	46
Indiana	81				

AGGREGATE CIRCULATION.

The circulation of these papers is large and constantly increasing. It is larger than the circulation of any other lists or combinations of country papers in the United States—the last aggregate weekly circulation being *seven hundred thousand seven hundred and thirty copies (700,730)*.

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prevalence of the trade wind, which blows southwest for about nine months of the year, the south shores of the islands afford safe anchorage almost everywhere.

At Honolulu, the extremes of temperature in the shade during the 12 months are 90° and 50°, and the diurnal range is 12°. Rains brought by the northeast trade-wind are frequent on the mountains; but on the leeward side of the islands little rain falls, and the sun is rarely obscured by the clouds. The soil, the constituent parts of which are mainly scorïæ, decomposed lava, and sand, is generally thin and poor. This, however, is not universally the case. At the bases of the mountains and in the valleys, where abrasion, disintegration, and the accumulation of vegetable mould have gone on for ages, there are extensive tracts as fertile as they are beautiful. The islands produce fine pasturage in abundance, and large herds are bred and fattened to supply meat to the whalers and merchant ships. The upland slopes of the mountains are clothed with dense forests; and lower down are grassy plains and sugar and coffee plantations. Basalt, compact lava, coral rock, and sand-stone are used for building purposes. No metals occur. Several of the islands, especially Hawaii and Kauï, are well supplied with rivers, which, from the size and conformation of the group, are necessarily small, but afford great facilities for irrigation. Vast numbers of semi-wild horses roam the islands, and while they consume the pasturage and break down the fences, are of little use. The indigenous fauna is small, and consists mainly of swine, dogs, rats, a bat that flies by day, birds of beautiful plumage, but for the most part songless. Among the indigenous trees and plants are the sugar-cane, banana, plantain, cocoanut, candle-nut, various palms, the taro, a succulent root which formed the staple of the food of the natives, and is still generally used, the cloth-plant, and the *ti*, the roots of which were baked and eaten, while the leaves were used for thatching huts. Cattle and other useful and foreign animals and plants were introduced by Vancouver and other navigators. In 1860 there were 30,000 mules and semi-wild horses in the kingdom.

The government of Hawaii is a constitutional monarchy.

The public revenue during the year ending March 31st, 1874, was 1,136,524 dollars; the public expenditure, 1,192,512 dollars. The public debt, at the same date, 355,050 dollars.

The principal exports during the year 1874 were: Sugar, 24,567,000 pounds; rice, 1,188,000 pounds; coffee, 75,000 pounds; pulu, 418,000 pounds; tallow, 126,000 pounds; wool, 400,000 pounds; hides, 94,575. Total value, 1,839,000 dollars. The imports during the same year amounted in value to 1,310,000 dollars.

Of 115 vessels that entered the port of Honolulu during 1874, 64 were American, 30 English, 15 Hawaiian, etc.

Commission from THE HAWAIIAN ISLANDS to the International Exhibition.

HON. S. G. WILDER, Minister of the Interior.

HON. J. U. KAWAIMUI.

ELISHA H. ALLEN, JR.

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HAWAII.

(South of South Avenue, Columns 10 to 14.)

Manufactures, Education and Science, Art.

Minerals, Ores, Stone, Mining Products.	
1 Gilman, J. H.—Lava specimens from Kilaura.	100
2 Hawaiian Museum.—Geological specimens, by W. L. Green.	100
3 Hitchcock, H. R.—Geological specimens from crater of Kilaura.	100
4 Boys' Boarding School.—Coal from the forests of Haleakala.	101
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3 Pharmaceutical Preparations Co., Rio de Janeiro.—Pharmaceutical and chemical preparations.	200
4 Province of Maranhao.—Pharmaceutical preparations.	200
5 Province of S. Paulo.—Medicines.	200
6 Viotti, E.—Pharmaceutical preparations.	200
7 Penna, Aranjo.—Medicines.	200
8 Lepage.—Pharmaceutical preparations.	200
9 Duart, Dias.	200
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b Oils.	201
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12 Province of Para.—Medicinal oils.	201
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- 282 Crest, M., & Co., Province of Santa Fe.**—Pack saddle used by the army, leather girth, etc. 296
- 283 Provincial Commission, Province of Santa Fe.**—Horse cloths, tapir leather reins and surcingle. 296
- 284 Provincial Commission, Province of Tucuman.**—Leather caparisons, saddlery, lassoes, etc. 296
- 285 Provincial Commission, Province of Cordoba.**—Harness, saddlery, horse cloth, etc. 296
- 286 Provincial Commission, Province of San Luis.**—Bristle horse cloth, ostrich feather and other caparisons. 296
- 287 Escobar, Juan de D., Province of San Luis.**—Stirrups, braided shackles, girth, and reins. 296
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- 289 Provincial Commission, Province of Salta.**—Pack-saddle, girth, straps, head stall, tapir leather reins, caparisons, lassoes, etc. 296
- 290 Provincial Commission, Province of Catamarca.**—Vizcacha leather caparison, and braided lasso. 296
- 291 Andalgalá Commission, Province of Catamarca.**—Horse cloth, harness, girths, reins, bridles, etc. 296
- 292 Gigena, Justiniano, Province of Catamarca.**—Horse cloth. 296
- 293 Gonzalez, Daniel, Province of Mendoza.**—Horse cloths. 296
- 294 Provincial Commission, Province of Mendoza.** 296
- 295 Commission of the Province of Jujui.**—Tapir leather reins, bridle, etc. 296

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CLASSIFICATION.

DEPARTMENT III.—EDUCATION AND SCIENCE.

EDUCATIONAL SYSTEMS, METHODS, AND LIBRARIES.

CLASS 300.—Elementary instruction. Infant schools and kindergartens, arrangements, furniture, appliances, and modes of training.

Public schools, graded schools, buildings and grounds, equipments, courses of study, methods of instruction, text-books, apparatus, including maps, charts, globes, etc.; pupils' work, including drawing and penmanship; provisions for physical training.

CLASS 301.—Higher education. Academies and high schools.

Colleges and universities. Buildings and grounds; libraries, museums of zoology, botany, mineralogy, art, and archeology; apparatus for illustration and research, mathematical, physical, chemical, and astronomical courses of study; text-books, catalogues, libraries, and gymnasiums.

CLASS 302.—Professional schools, theology, law, medicine, and surgery, dentistry, pharmacy, mining, engineering, agriculture, and mechanical arts, art and design, military schools, naval schools, normal schools, commercial schools, music.

Buildings, text-books, libraries, apparatus, methods, and other accessories for professional schools.

CLASS 303.—Institutions for instruction of the blind, deaf, and dumb, and the feeble-minded.

CLASS 304.—Education reports and statistics.

National bureau of education.

State, city, and town systems.

College, university, and professional systems.

CLASS 305.—Libraries, history, reports, statistics, and catalogues.

CLASS 306.—School and text-books, dictionaries, encyclopædias, gazetteers, directories, index volumes, bibliographies, catalogues, almanacs, special treatises, general and miscellaneous literature, newspapers, technical and special newspapers and journals, illustrated papers, periodical literature.

INSTITUTIONS AND ORGANIZATIONS.

CLASS 310.—Institutions founded for the increase and diffusion of knowledge. Such as the Smithsonian Institution, the Royal Institution, the Institute of France, British Association for the Advancement of Science, and the American Association, etc., their organization, history, and results.

CLASS 311.—Learned and scientific associations. Geological and mineralogical societies, etc. Engineering, technical, and professional associations. Artistic, biological, zoological, medical schools, astronomical observatories.

CLASS 312.—Museums, collections, art galleries, exhibitions of works of art and industry. Agricultural fairs, state and county exhibitions, national exhibitions. International exhibitions.

Scientific museums and art museums.

Ethnological and archeological collections.

CLASS 313.—Music and the drama.

SCIENTIFIC AND PHILOSOPHICAL INSTRUMENTS AND METHODS.

CLASS 320.—Instruments of precision, and apparatus of physical research, experiment, and illustration.

Astronomical instruments and accessories, used in observatories.

Transits, mural circles, equatorials, collimators.

Geodetic and surveying instruments. Transits, theodolites, needle compasses. Instruments for surveying underground in mines, tunnels, and excavations.

Nautical astronomical instruments. Sextants, quadrants, repeating circles, dip-sectors.

Leveling instruments and apparatus. Carpenters' and builders' levels, hand levels, water levels, engineers' levels.

Instruments for deep-sea sounding and hydrographic surveying.

Meteorological instruments and apparatus.

Thermometers, pyrometers.

Barometers.

Hygrometers and rain gauges,

Maps, bulletins.

Blanks for reports, methods of recording, reducing, and reporting observations.

CLASS 321.—Indicating and registering apparatus, other than meteorological; mechanical calculation.

Viameters, pedometers, perambulators.

Gas meters.

Water meters, current meters, ships' logs, electrical logs.

Tide registers.

Apparatus for printing consecutive numbers.

Counting machines, calculating engines, arithmometers.

CLASS 322.—Weights, measures, weighing and meteorological apparatus.

Measures of length; graduated scales on wood, metal, ivory, tape, or ribbon; steel tapes, chains, rods, verniers, rods, and graduated scales for measuring lumber, goods in packages, casks, etc., gaugers' tools and methods.

Measures of capacity for solids and liquids.

Weights. Scales and graduated beams for weighing; assay balances, chemical balances. Ordinary scales for heavy weights; weighing locomotives and trains of cars. Postal balances. Hydrometers, alchometers, lactometers, etc.; gravimeters. (*See Class 571.*)

CLASS 323.—Chronometric apparatus.

Chronometers. Astronomical clocks. Church and metropolitan clocks. Ordinary commercial clocks. Pendulum and spring clocks. Marine clocks. Watches. Ciepsydras, hour glasses, sun dials. Chronographs, electrical clocks. Metronomes.

CLASS 324.—Optical and thermotic instruments and apparatus.

Mirrors, plane and spherical.

Lenses and prisms.

Spectacles and eyeglasses, field and opera glasses, graphoscopes and stereoscopes.

- Cameras and photographic apparatus.
- Microscopes.
- Telescopes.
- Apparatus for artificial illumination, including electric, oxyhydrogen, and magnesium light.
- Stereopticons.
- Photometric apparatus.
- Spectroscopes and accessories for spectrum analysis.
- Polariscopes, etc.
- Thermic apparatus.

CLASS 325.—Electrical apparatus.

- Friction machines.
- Condensers and miscellaneous apparatus to illustrate the discharge.
- Galvanic batteries and accessories to illustrate dynamical electricity.
- Electro-magnetic apparatus.
- Induction machines, Rumkoff coils, etc.
- Magnets and magneto-electrical apparatus.

CLASS 326.—Telegraphic instruments and methods.

- Batteries and forms of apparatus used in generating the electrical currents for telegraphic purposes.
- Conductors and insulators, and methods of support, marine telegraph cables.
- Apparatus of transmission; keys, office accessories, and apparatus.
- Receiving instruments, relay magnets, local circuits.
- Semaphoric and recording instruments.
- Codes, signs, or signals.
- Printing telegraphs for special uses.
- Electrographs.
- Dial or cadran systems.
- Apparatus for automatic transmission.

CLASS 327.—Musical instruments and acoustic apparatus.

- Percussion instruments, drums, tamborines, cymbals, triangles.
- Pianos.
- Stringed instruments other than pianos.
- Automatic musical instruments, music boxes.
- Wind instruments of metal and of wood.
- Harmoniums.
- Church organs and similar instruments.
- Speaking machines.
- Vocal music.

ENGINEERING, ARCHITECTURE, CHARTS, MAPS, AND GRAPHIC REPRESENTATIONS.

(For Agricultural Engineering, see Class 680.)

(For Mining Engineering, see Class 120.)

CLASS 330.—Civil engineering. Land surveying, public lands, etc.

- River, harbor, and coast surveying. Construction and maintenance of roads, streets, pavements, etc. Surveys and location of towns and cities, with systems of water supply and drainage. Arched bridges of metal, stone, brick, or beton. Trussed girder bridges. Suspension bridges. Canals, aqueducts, reservoirs, construction of dams. Hydraulic engineering and means of arresting and controlling the flow of water.

Submarine constructions, foundations, piers, docks, etc.

CLASS 331.—Dynamic and industrial engineering. Construction and working of machines; examples of planning and construction of manufacturing and metallurgical establishments.

CLASS 332.—Railway engineering. Location of railways, and the construction and management of railways.

CLASS 333.—Military engineering.

CLASS 334.—Naval engineering.

CLASS 335.—Topographical map. Marine and coast charts.

Geological maps and sections.

Botanical, agronomical, and other maps, showing the extent and distribution of men, animals, and terrestrial products. Physical maps.

Meteorological maps and bulletins. Telegraphic routes and stations. Railway and route maps. Terrestrial and celestial globes. Relief maps and models of portions of the earth's surface. Profiles of ocean beds and routes of submarine cables.

PHYSICAL, SOCIAL, AND MORAL CONDITION OF MAN.

CLASS 340.—Physical development and condition.

The nursery and its accessories.

Gymnasiums, games, and manly sports. Skating, walking, climbing, ball-playing, acrobatic exercises; rowing, hunting, etc.

CLASS 341.—Alimentation. Markets; preparation and distribution of food.

CLASS 342.—The dwelling. Sanitary conditions and regulations. Domestic architecture.

Dwellings characterized by cheapness, combined with the conditions essential to health and comfort.

Fire-proof structures.

Hotels, club-houses, etc.

Public baths.

CLASS 343.—Commercial systems and appliances.

Mercantile forms and methods, counting-houses and offices.

Banks and banking.

Saving and trust institutions.

Insurance; fire, marine, life, etc.

Commercial organizations, boards of trade, merchants', produce, and stock exchanges.

Corporations for commercial and manufacturing purposes.

Railway and other transportation companies.

Building and loan associations.

CLASS 344.—Money. Mints and coining.

Collections of current coins.

Historical collections.

Tokens, etc.

Bank notes and other paper circulating mediums.

Commercial paper, bills of exchange, etc.

Securities for payment of money, stocks, bonds, mortgages, ground rents, quit rents.

Precautions against counterfeiting and misappropriation of money.

CLASS 345.—Government and law. Various systems of government.

Departments of government. Revenue and taxation, military organization, executive powers, legislative forms and authority, judicial functions and systems, police regulations, government charities.

International relations; international law; diplomatic and consular service, etc., allegiance and citizenship; naturalization.

Codes.

Municipal government.

Protection of property in inventions.

Postal system and appliances.

Punishment of crime.

Prisons and prison management and discipline; police stations; houses of correction; reform schools; naval or marine discipline; punishment at sea.

CLASS 346.—Benevolence. General hospitals.

Special hospitals for the eye and ear, for women, etc.

Hospitals for contagious and infectious diseases.

Hospitals for the insane—under State control, and private asylums.

Quarantine systems and organizations.

Sanitary regulations of cities.

Dispensaries.

Inebriate asylums.

Lying-in asylums.

Magdalen asylums.

Asylums for infants and children. Foundling and orphan asylums, children's aid societies.

Homes for the aged and infirm; homes for aged men and women; soldiers' homes; homes for the maimed and deformed; sailors' homes.

Treatment of paupers. Almshouses, feeding the poor, lodging houses.

Emigrant aid societies.

Treatment of aborigines.

Prevention of cruelty to animals.

CLASS 347.—Co-operative associations.

Political societies and organizations.

Military organizations and orders.

Trade unions and associations.

Industrial organizations.

Secret orders and fraternities.

CLASS 348.—Religious organizations and systems. Origin, nature, growth, and extent of various religious systems and faiths. Statistical, historical, and other facts.

Religious orders and societies, and their objects.

Societies and organizations for the propagation of systems of religion by missionary effort.

Spreading the knowledge of religious systems by publications.

Bible societies, tract societies, colportage.

Systems and methods of religious instruction and training for the young.

Sunday-schools, furniture and apparatus.

Associations for religious or moral improvement.

Dispensing charities, church guilds.

CLASS 349.—Art and industrial exhibitions. Agricultural fairs, state and county exhibitions, national exhibitions, international exhibitions, international congresses, etc.

UNITED STATES.

School Books, Furniture, Apparatus, Statistics.

Educational Systems, Methods, and Libraries.

- 1 Barnes, A. S., & Co., New York, N. Y.—School books, maps, charts, etc. T 73 to 78. 300
- 2 New York Silicate Book Slate Co., New York, N. Y.—School book slates, liquid blackboard slating, blackboards on wall, cloth, and paper. T 68. 300
- 3 Smith, J. L., Philadelphia, Pa.—Maps, map rollers and cases, drawing paper, map work. T 73 to 78. 300
- 4 Moeller, Peter W., New York, N. Y.—Adjustable blackboard frame. Q 78. 300
- 5 Nims, H. B., & Co., Troy, N. Y.—Terrestrial and celestial globes. P 77. 300
- 6 Bancroft, J. A., & Co., Philadelphia, Pa.—School desks, seats, and merchandise; Sunday-school and church furniture. T 51. 300
- 7 Mitchell, S. A., Philadelphia, Pa.—Atlases, maps, engravings, etc. T 73 to 78. 300
- 8 Schermerhorn, J. W., & Co., New York, N. Y.—Books, charts, and modern school material. T 73 to 78. 300
- 9 Peirce, I. Newton, Philadelphia, Pa.—Combination desks, seats, settee, blackboard, model of a log cabin school house, maps. (*Pennsylvania Educational Building*) 300
- 10 Steiger, E., New York, N. Y. T 73 to 78.
- a* Kindergarten material. 300
- b* French and German school books, reading charts, automatic tellurian, globes, relief maps. T 73 to 78. 306
- 11 Cowperthwait & Co., Philadelphia, Pa. T 73 to 78.
- a* Text books and wall maps for schools. 300
- b* Illustrated works. 306
- 12 Sower, Potts, & Co., Philadelphia, Pa. T 73 to 78.
- a* Outline wall maps. 300
- b* Normal school books. 30x
- c* Publications of five generations of Sower family. 306
- 13 Ditson, J. E., & Co., Philadelphia, Pa.—Sheet music. T 73 to 78. 302
- Stevens Institute of Technology, Hoboken, N. J.—Models, drawings, apparatus of engineering, etc.; testing machines for lubricants, autographic testing machine for materials of construction. T 67. 302
- 15 Hampton Normal and Agricultural Institute, Hampton, Va.—Views, oil paintings, ground plan of building and of experimental farm; photographs of building and of students, examination papers. (*South Gallery*) 302
- 16 State of Indiana Educational Department (by S. H. Smart, Indianapolis).—Bound volumes of examination manuscripts, by pupils of schools at Indianapolis, Evansville, Terre Haute, Fort Wayne, Logansport, Richmond, Goshen, Plymouth, Bedford, Huntington, Elkhart, Lawrenceburg, Mishawaka, Kokomo, Vevay, Delphi, Franklin, Bartholomew county, Martinville, Salem, Vanderburg county, and Wayne county.
- Reports and works of Indiana authors. Drawings from schools.
- "Indiana School Journal," plans of buildings, maps of cities, school blanks, etc.
- Herbariums and botanical specimens prepared by pupils of schools at Bedford and Indianapolis.
- School apparatus from Terre Haute. Specimens from Owen cabinet.
- Mineral collection by pupils of Huntingtof schools.
- Electrical apparatus for weighing under glass, invented by Prof. H. W. Wiley, Purdue University.
- Chemical products by pupils of Purdue University.
- Indiana fishes prepared by Prof. Cope-land, of Indianapolis High School.
- Zoological specimens prepared by pupils of Indianapolis High School.
- Native woods of Huntington county, by pupils of Huntington city schools.
- Drawings from Fort Wayne, Indianapolis, and La Fayette schools.
- Photographed blackboard work, specimens of penmanship and written music from Indianapolis schools.
- School law of the State, condensed.
- Photographed blackboard work from La Fayette, Fort Wayne, and Terre Haute schools.
- Photographs of prominent educators.
- Primary work of Indianapolis and Fort Wayne schools.
- Models of Ward and High School buildings at Indianapolis, Fort Wayne, Evansville, Muncie, Terre Haute, and La Fayette.
- Model of log school house, the first built in Delaware county, Indiana.
- Charts, exhibiting school system and its growth, and the college system of the State.
- Banners, exhibiting school system, statistics, distribution of school houses, and the

School Books, Furniture, Apparatus, Statistics.

- growth of the system in twenty years by semi-decades.
- Banners showing Purdue, Asbury, and State Universities, Wabash, Union, Christian, and Eastham Colleges.
- Banners showing State and Northern Indiana normal schools, and Indianapolis and Huntington city systems. (*South Gallery.*) 304
- 17 State of Michigan** (F. W. Noble, Secretary, Detroit, Mich.)—Michigan school system, its history, statistics, plans, elevations, interior views, and students' work in public, primary, graded, and high schools, universities, and colleges. Rare birds and marine and land animals from museum of Michigan University. (*South Gallery.*) 304
- 18 State of Wisconsin Educational Department** (by Edward Searing, Superintendent of Public Instruction).—Students' work, photographs of school buildings, educational map, books, etc. (*South Gallery.*) 304
- 19 Educational Exhibit of Ohio** (by Chas. S. Smart).—Statistical and documentary history of education in Ohio. (*South Gallery.*) 304
- 20 State of Rhode Island Board of Education**, Providence, R. I. (by L. B. Stockwell).—History and statistics, school work, school houses. (*South Gallery.*) 304
- 21 State of New Hampshire, Department of Public Instruction** (by John W. Simonds, State Superintendent, Franklin, N. H.).—Kindergarten school—Specimens of kindergarten work. Public schools—Slates covered with work of primary pupils; specimens of scholars' written work, and examinations, compositions, drawings, penmanship; maps and plans; photographs and plans of school buildings and rooms; photographs of school superintendents and teachers; illustrated school register; wooden model of school-house.
- Academies, seminaries, and high schools—Photographs and plans of buildings and rooms; photographs of teachers and students; students' written work, drawings, etc.
- Dartmouth College—Manuscript history of college; bound catalogues and pamphlets, students' examination papers, drawings, illustrated programme, map of grounds, portraits of faculty and class of 1876; plans and views of buildings and rooms.
- State Normal School—Reports; students' written work, photographs of buildings and rooms.
- Thayer School of Engineering—Model Pratt truss railroad bridge.
- Chandler Scientific School—Drawings, surveying papers, railroad map, models in plaster, examination papers and abstracts, essays.
- Agricultural College—Geological map. Educational chart and history of education in the State; history of education in towns and cities.
- State school laws, reports, and registers; town school reports, history and catalogue of academies, etc.; records of normal school; Bouton's provincial papers.
- Educational publications; histories of towns; text-books used 100 years ago; text-books in present use. (*South Gallery.*) 304
- 22 State of Connecticut Educational Department** (by B. G. Northrop, Secretary, Hartford, Conn.).—Work by scholars and Chinese students; photographs of schoolhouses; works by former members of Yale College. (*South Gallery.*) 304
- 23 State of Illinois, Department of Public Instruction** (by S. M. Etter, Superintendent).—Reports of the department, and history of education in the State. Public schools.—Pupils' work. Colleges and Seminaries.—Work of students, museums, etc. Industrial University, Champaign, Ill.—Books, portfolios, and charts, containing work of students.
- Illinois Normal Schools.—Work of students, museums, etc. (*South Gallery.*) 304
- 24 State of Maine, Educational Department** (by Warren Johnson, State Superintendent, Augusta, Maine).
- Kindergarten school, Lewiston; public schools in Portland, Bangor, Bath, Lewiston, Calais, Augusta, and various other cities and towns; private schools; Johnson Home School for Boys; Abbott School for Boys; St. Catharine's School for Girls, and others. School furniture from Doyle Bros., Bangor.
- Bowdoin College, Colby University, Bates College.
- Maine Wesleyan Seminary and Female College, Westbrook Seminary, Waterville Classical Institute, Maine Central Institute, Hallowell Classical Institute, and others; Western Normal School; Farmington and Eastern Normal School, Castine.
- State collection of agriculture and mechanick arts. (*South Gallery.*) 304
- 25 State of Iowa, Educational Department** (by Alonzo Abernethy, Des Moines).—Collective exhibit of the public schools of Davenport, Des Moines, Atlantic, Muscatine, Ottumwa, Maringo, Boone, Sigourney, Winterset, Lyons, Indianola, Wheatland, Clarence, and Osceola, and of Oskaloosa and Western Colleges, Iowa. Reports, charts, drawings, and examination manuscripts.
- Iowa School Furniture Co.—School desks and seats. (*South Gallery.*) 304
- 26 State of Tennessee Educational Department**, collective exhibit.
- Trousdale, Leon, State Superintendent of Schools, Nashville, Tenn.—Reports and school banner.
- Dean, John R., County Superintendent, Shelbyville, Tenn.—Manuscripts of pupils of the schools, and school banner.
- Presnell, H., County Superintendent of Schools, Jonesboro, Tenn.—Photographs of Colored Training School and South Normal School buildings.
- Pickett, A., City Superintendent of Schools, Memphis, Tenn.—Examination manuscripts and principles of instruction; geographical drawings.
- Caldwell, S. Y., City Superintendent, Nashville, Tenn.—Examination manuscripts, drawings, school banner, and annual reports.
- Perkins, W. H., Principal Peabody Graded School, Powell's Station, Tenn.—Examination manuscripts of classes D and C, second grade.
- Tennessee Medical Society, Nashville, Tenn.—Transactions of the session, 1845.
- Lindsley, J. Berrian, Nashville, Tenn.—Life and works of Philip Lindsley.
- Giers, C. C., Nashville, Tenn.—Photographs of educators. (*South Gallery.*) 304

School Books, Furniture, Apparatus, Statistics.

27 Commonwealth of Massachusetts. Department of Education.—Mineralogical specimens for common schools; drawing and work on slates from common and primary schools; industrial drawing; scholars' work other than drawing; regulations and reports from Boston, New Bedford, Greenfield, Newton, Lowell, Fitchburg, Cambridge, Taunton, Worcester, Fall River, Springfield, Brookfield, Clinton, Essex, Waltham, Kingston, Lenox, Leominster, Spencer, Lancaster, Northampton, Stoneham, Pittsfield, and South Egremont. Writing copy books and charts from J. W. C. Gilman; books, music charts, and globe from Cinn Bros.; kindergarten apparatus from Milton, Bradley & Co.; school furniture from A. G. Whitcomb and J. L. Ross; Chauncy Hall and other school furniture from W. O. Haskell & Sons; crayons from Parmenter & Walker; charts, models, plates, and textbooks from S. Edward Warren; art toys for kindergarten from W. C. Brigham; arithmetical cards from Miss M. H. Faxon and Miss Annie E. Walcutt; amateur drawing by Charles L. Adams, Dorchester.

Views, plans, and sites of State Normal schools, with stereoscope and stereoscopic views. Drawings from high schools and academies; photographs of Springfield, Waltham, and Grafton high schools; architectural drawings of Lawrence, Spencer, Peabody, and Salisbury high schools; photographs from Harvard University; photographs from Amherst College, catalogue of colleges and library, history of college and student life; catalogues, list of officers, and photographs from Williams College; photographs and catalogues from Boston College, and pamphlets from Boston University; view of Wellesley College, ground plans and site, interior views and reports; catalogues from Tufts College; views from College of the Holy Cross; photographs and architectural drawings from Agricultural College at Amherst; architectural illustrations, special reports, and documents from Lasell Female Seminary; architectural illustrations from Worcester Academy; documents, military equipments, special reports, and scholars' work from Chauncy Hall School; catalogues from Warren and Pierce Academies; reports from South Egremont Academy; photographs and historical report from Mount Holyoke Female Seminary; catalogue from Lawrence Academy, Groton.

Drawing, painting, and modeling from State Normal Art School; drawings from Worcester County Free School of Industrial Science, mechanical products of scholars, theses, and illustrations of buildings; documents from Andover Theological Seminary; materials for instruction in industrial drawing, books, models in wood and plaster, instruments, etc.; drawings and designs from Peter Roos and E. Whitfield; anatomical preparation of the human brain by Dr. Denny; osseous anatomy of the ear, by Dr. Clarence J. Blake; annual reports and memoirs of Peabody Academy of Science, Salem; musical publications from Oliver Ditson & Co.

Books and apparatus from Perkins Institution for the Blind; photographs and historical reports from Clark Institution for the Dumb, Northampton; visible speech,

charts, and designs from A. Graham Bell.

Annual reports of the Board of Education; annual reports of school committees from the eighteen cities and three hundred and twenty-three towns of the commonwealth; school reports from Paxton.

Supplement to report on ichnology; gas inspectors' reports; catalogues, documents, and tablet from Boston public library; history, catalogues, and pamphlets from Brighton public library; history and architectural illustrations from Concord public library; catalogues from Brookline, Haverhill, and Belmont public libraries; photographs and architectural drawings from Framingham, Lynn, and Worcester public libraries; catalogue from Paxton public library.

Periodical literature of the State. Drawing of the birthplace of Whittier; school text-books, from Brewer & Tileston and G. C. Merriam; life of Horace Mann, lectures and reports; genealogical works from J. M. Hawks; works on insects and animals, from A. S. Packard, jr.; bust and works of Nathaniel Bowditch, from H. I. Bowditch; book from Dr. Henness; tables of metric system, from J. Pickering Putnam; philosophic works, from Francis Bowen; problem of health, from Reuben Green; work on the eye, from B. J. Jeffreys; book of zoology and scientific pamphlets, from Prof. E. S. Morse; Psyche Advertiser; text-books, from Schoenhof & Moeller; books from W. T. Adams, W. F. Draper, Sampson Davenport & Co., Greenough Co., Dean Dudley, Richard Briggs; text-books, from Taggart & Brown; work on trees of Massachusetts, from George B. Emerson; publications from Women's Educational Society.

Publications from Medical Improvement Society and Natural History Society; pamphlets from Numismatic Society; register and memoirs from New England Historic Genealogical Society.

Bust of Prof. Agassiz, and architectural illustrations of Agassiz Museum; reports from Worcester Lyceum and Natural History Society; illustrations and description of mastodon from Warren Museum.

Historical reports from Handel and Haydn Society; philosophical instruments from N. M. Lowe; astronomical drawings from L. Trouvelot; astronomical instruments from Prof. Doebare; astronomical lantern from James Freeman Clarke; maps of the State of Massachusetts.

Computers with keys from J. E. Fuller. Health lift from W. A. Knight.

Reports of the Board of Health and State Charities; harbor commissioners' and gas inspectors' reports; reports from insurance and savings bank commissioners; pamphlet on life insurance from Elizur Wright; annual report from Boston Board of Trade.

Registration reports, public documents, acts, and resolves; reports of commissioners on landfisheries; tax commissioners' report; views and plans of new state prison for women; photographs and reports from Westboro Reform School; architectural illustrations and reports from School for Neglected Children, Deer Island.

Reports, view, and plans of new state hospital at Danvers; architectural drawings, reports, and statistics from Northampton state lunatic hospital.

School Books, Furniture, Apparatus, Statistics.

- Reports from the House of the Angel Guardian.
Photographs from Hoosac tunnel.
Geological maps. (*South Gallery.*) 304
- 28 State of New Jersey, Department of Public Instruction** (by Ellis A. Apgar, Trenton, N.J.)—Work by school children, viz.: maps drawn from memory; mathematical operations; analysis and parsing; compositions; spelling; primary and miscellaneous work; artistic drawing in crayon, Indian ink, and lead pencil; mineral and natural history collections; mechanical contrivances; photographic views, exterior and interior of school-houses, and decennial exhibit of their improvements, showing condition in 1866 and 1876; kindergarten work; penmanship; history of schools in New Jersey; works written by alumni of Princeton and Rutgers colleges, and photographic views of the same. (*South Gallery.*) 304
- 29 State of Pennsylvania.**—Educational exhibit shown in Pennsylvania Educational Hall.
- 30 Bartlett, John R., Providence, R.I.**—Catalogue of the library of the late John Carter Brown, relating to America. T 73 to 78. 305
- 31 Lippincott, J. B., & Co., Philadelphia, Pa.**—Various publications. T 72. 306
- 32 Porter & Coates, Philadelphia, Pa.**—Books. T 73 to 78. 306
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- 283 Mathusheff Piano Co., New Haven, Conn.**—Pianos. P 59. 327
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- 286 Kranich & Bach, New York, N. Y.**—Grand, upright, and square piano fortés. N 63. 327
- 287 Clough & Warren Organ Co., Detroit, Mich.**—Parlor organ. P 59. 327
- 288 Missenhaber, Chas., New York, N. Y.**—Excelsior musical instruments. P 59. 327
- 289 Komppf, Ph., New York, N. Y.**—Military drums, banjos, and tambourines. P 62. 327
- 290 Light & Ernst, New York, N. Y.**—Grand square piano fortés. P 65. 327
- 291 Willis, Aug. L., Philadelphia, Pa.**—Octave coupler for piano fortés. H 71. 327
- 292 Browne & Buckwell, New York, N. Y.**—Grand concert double action harp and music desk. P 63. 327
- 293 Conn & Dupont, Elkhart, Ind.**—Musical instruments for bands; improved mouthpieces for band instruments. P 59. 327
- 294 Boston Musical Instrument Manufactory, Boston, Mass.**—Brass band musical instruments. P 64. 327
- 295 Schindler, C. A., New York, N. Y.**—Piano stools. P 62. 327
- 296 Taylor & Farley Organ Co., Worcester, Mass.**—Cabinet and church reed organs. P 68. 327

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- 298 American Bridge Co., Chicago, Ill.**—Model of rigid suspension bridge, details of construction, photographs and drawings. T 67. 330
- 299 Clarke, Reeves, & Co., Phoenixville Bridge Works, Philadelphia, Pa.**—Photographs and models of bridges, viaducts, and other iron structures actually executed. (*West Gallery.*) 330
- 300 Pettit, Henry, & Wilson, Jos. M., Engineers and Architects, Philadelphia, Pa.**—The Main Exhibition building, Machinery Hall and adjacent boiler houses for the International Exhibition, 1876. (*In Park.*) 330
- 301 King Iron Bridge and Manufacturing Co., Cleveland, Ohio.**—Wrought iron highway bridge between Horticultural Hall and Art Gallery. 330
- 302 Pearson, G. W., Ogdensburg, N. Y.**—Model of a standpipe. (*West Gallery.*) 330
- 303 Pettit, Henry, Philadelphia, Pa.**—Bridges and bridge construction. (*West Gallery.*) 330
- 304 Wilson, Jos. M., Philadelphia, Pa.**—Bridge and bridge construction. (*West Gallery.*) 330
- 305 Centennial Commission of the American Society of Civil Engineers, Pa.**—Papers, drawings, photographs, and models of engineering in America. (*West Gallery.*) 330
- 306 Chanute, Octave, New York, N. Y.**—Engineering exhibits relating to bridges and bridge construction. (*West Gallery.*) 330

EDUCATION AND SCIENCE.

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- 308** Herring, Rudolph, Philadelphia, Pa.—Plans of bridges, with photographs showing progress; section of sewers of Philadelphia. (*West Gallery.*) 330
- 309** Chester, Stephen, New York, N. Y.—Exhibit relating to electrical engineering. (*West Gallery.*) 330
- 310** Laruelle, J. H., Philadelphia, Pa.—Bridges and bridge construction. (*West Gallery.*) 330
- 311** Clark, Reeves, & Co., Philadelphia, Pa.—Bridges and bridge construction. (*West Gallery.*) 330
- 312** Rockwood, Geo. F., New York, N. Y.—Photographs showing successive stages of engineering construction. (*West Gallery.*) 330
- 313** Cressier, D. W. C., Chicago, Ill.—Model of hydrant and stopcock. (*West Gallery.*) 330
- 314** Jervis, John B., Rome, N. Y.—Engineering drawings, relating to construction of canals; Carbondale railroad and Croton aqueduct. (*West Gallery.*) 330
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- 318** Ellis, Theo. G., Hartford, Conn.—Engineering exhibit relating to river and harbor improvement. (*West Gallery.*) 330
- 319** McAlpine, Wm. J., Albany, N. Y.—Engineering exhibits relating to canals and inland navigation. (*West Gallery.*) 330
- 320** Emery, Chas. E., New York, N. Y.—Engineering exhibits relating to hydraulic motors and machines. (*West Gallery.*) 330
- 321** Smith, Wm. Sooy, Maywood, Ill.—Engineering exhibit relating to foundations and masonry. (*West Gallery.*) 330
- 322** Shedd, J. Herbert, Providence, R. I.—Engineering exhibits relating to sewerage and sanitary purposes. (*West Gallery.*) 330
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- 326** Hanging Rock Iron Region, Iron-ton, Ohio.—Geological map of Ohio's portion of the Hanging Rock iron region. T 68. 335
- 327** Earnshaw, Henry, Cincinnati, Ohio.—Photographs of parks and cemetery. (*West Gallery.*) 335
- 328** Cleveland, H. W. S., Chicago, Ill.—Design (adopted) for improvement of South Park, Chicago. (*West Gallery.*) 335
- 329** Bowditch, Ernest W., Boston, Mass.—Plans of proposed chain of parks for Boston; a cemetery, and a country estate. (*West Gallery.*) 335
- 330** Krause, H., New York, N. Y.—Topographical maps. (*West Gallery.*) 335
- 331** Sibeth, Otto, New York, N. Y.—Construction map New York Central Park. (*West Gallery.*) 335
- 332** Walling, H. T., Boston, Mass.—Topographical maps and atlases. (*West Gallery.*) 335
- 333** Bogart, John, New York, N. Y.—Engineering exhibit relating to park work, surveying, and geodesy. (*West Gallery.*) 335
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- 334** Health Lift Co., New York, N. Y.—Reactionary lift apparatus. N 52. 340
- 335** Shibe, J. D., Philadelphia, Pa.—Base balls. B 77. 340
- 336** Reach & Johnston, Philadelphia, Pa.—Base balls and sporting goods. B 75. 340
- 337** Marsh, Jas. P., & Co., Chicago, Ill.—Improved health lift. N 52. 340
- 338** Rice, S. W., & Co., New York, N. Y.—Base and dead balls, uniforms, and sporting goods. B 75. 340
- 339** Hiester, Chas. Edward, Harrisburg, Pa.—Exercising clubs of adjustable weight. N 50. 340
- 340** Leeds, Louis M., New York, N. Y.—Diagrams and charts on ventilation. B 78. 342
- 341** Derrom, Andrew, Passaic, N. J.—Workman's cottage. (*In Park.*) 342
- 342** Kasson, W. M., Department of Public Comfort. (*North, South, and West Entrances.*) 342
- 343** Department of Public Comfort.—Stationery, newspapers, periodicals, and photographs for sale. H 70 and N 6. 342
- 344** Rudolph & Walter, Camden, N. J.—Buffet. T 41 to 47. 342
- 345** Department of Public Comfort.—Café, Leland's. T 33 to 36. 342
- 346** American Missionary Association, New York, N. Y.—Map, showing location of institutions and mission stations in the United States, photographs of buildings, examination papers, catalogues. (*South Gallery.*) 348
- 347** Centennial Safe Deposit Co., Philadelphia, Pa.—Safes for the protection of valuables. N 65. 343
- 348** Scott, J. W., & Co., New York, N. Y.—Foreign stamp albums. P 73. 344
- 349** Boyle, John, New York, N. Y.—Mail bags, sacks, and lock pouches. C 78. 345
- 350** Inventors' Protective and Benevolent Association of the United States, Pittsburgh, Pa.—Working models of inventions of members of the association. (*West Gallery.*) 346
- 351** Young Mens' Christian Association of North America, Executive Committee, Richard C. Morse, Secretary, New York, N. Y.—Map, pictures, and plans of association buildings; reports, circulars, and other literature. (*South Gallery.*) 348

Architectural, Engineering Designs, etc.

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| 353 Heard & Sons, Cleveland, Ohio.—Architectural design of the Ohio State Building. 441 | 359 Pullman's Palace Car Co., Chicago, Ill.—Gold and silver model of a Pullman palace sleeping car. N 63. 571 |
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| 354 Schwarzmünn, H. J., Philadelphia, Pa.—Designs of Memorial Hall, Horticultural Hall, Judges' Pavilion, and Women's Pavilion. 441 | 361 Snow, J. H., Bucksport, Me.—Model ship. H 70. 594 |
| 355 Spurr, Chas. W., Boston, Mass.—Wood hangings and marqueteries. P 73. 452 | 362 American Steamship Co., Philadelphia, Pa.—Models and paintings of the company's steamships. N 63. 595 |
| 356 Stokes & Parrish, Philadelphia, Pa.—Passenger elevator. (S. E. Central Tower.) 503 | 363 State of New Jersey (by Geo. H. Cook, State geologist, New Brunswick, N. J.).—Specimens of wood growing in New Jersey. T 70. 600 |
| 357 Boston Hydraulic Motor Co., Boston, Mass.—Hydraulic motors for blowing Hook & Hastings' organ in gallery at east end of Nave. L 79 and K 79. 503 | 364 Philadelphia & Reading R. R. Co., Philadelphia, Pa.—Cereals. T 72. 620 |
| 358 Byrns & Bryan, New York, N. Y.—Ale pump. P 59. 565 | 365 State of New Jersey (by Geo. H. Cook, State geologist, New Brunswick, N. J.).—Fertilizers and soils. T 70. 681 |

GREAT BRITAIN.

(North of nave, Columns 23 to 38.)

Educational Books and Appliances, Scientific Instruments.

Educational Systems, Methods, and Libraries.

- 1 Sunday-school Union, London.—Works for Sunday-schools.—Books, magazines, cards, reward tickets, illuminations, and large type texts. Sunday-school registers, roll books, librarian and minute books; Sunday-school newspaper. 300
- 2 Beckhoffer, Eugene, Ravenswood, Bournemouth.—Specimens of calligraphy. 300
- 3 Bartholomew, John, Edinburgh.—Maps. 300
- 4 Ravenstein, Ernest George, Geographical Institute, London.—General and geological maps of New Zealand; physical and statistical atlas of United Kingdom; relief map of the United States; geographical and statistical works. 300
- 5 Johnston, W. & A. K., Edinburgh, Scotland.—Maps; illustrations of human anatomy, astronomy, botany, and mechanical powers. 300
- 6 Smith, C., & Son, London.—Maps and globes. 300
- 7 Adams, Walter Marsham, London.—The problem of Pythagoras; coelometer for illustrating elementary astronomy; mensurator for solving triangles, etc. 302
- 8 Augener, George, & Co., London.—Editions of the classics and other printed music books. 302
- 9 Clark, Edward Podmore, Bath.—Military model apparatus for illustrating drill movements. 302
- 10 The British and Foreign Blind Association, for Promoting the Education and Employment of the Blind, London.—Writing frames, embossed books, and maps for the blind. 303
- 11 Dickinson & Higham, London.—The hexagon bible. 306
- 12 Dicke, William, London.—Chromo-lithography, engraving and photographic engraving, and photographic engraving and printing: framed oleographs, chromographs from stone and surface printing, wood engraving, photographic engraving, etc. 306
- 13 Scott, Robson John, London.—Blocks used for wood engravings; compound and holed blocks of box and other woods. 306
- 14 Stephenson, Blake, & Co., Sheffield.—Specimens of printing, types, book of specimens. 306
- Johnson, Edmund, London.—Catalogues and other works having reference to national exhibitions. 306
- 16 Palmer, Samuel, London.—Index to the Times newspaper, a quarterly publication. 306
- 17 Loth, John Thomas, Edinburgh.—Educational books and illustrations of the thirty-three degrees of the ancient and accepted Scottish rite. 306
- 18 Lockwood, Crosby, & Co., London.—Books, rudimentary, scientific, educational, and classical series. 306
- 19 Cassell, Petter, & Galpin, London.—Illustrated books, publications, serials; educational books and appliances; electrotypes of engravings on wood. 306
- 20 Smith, David, Halifax, Yorkshire.—The "Dyer's Instructor." 306
- 21 Dowson, Sutherland, & Co. (limited), London.—Complete file of "Iron," a weekly newspaper. 306
- 22 Potts, Roberts, Trinity College, Cambridge.—Educational books. 306
- 23 Murray, Andrew, London.—Illustrations and specimens of galls produced by mites, aphides, flies (cecidomyia), sandflies, cymopidae. 306
- 24 Proprietors of the "Illustrated London News," London.—Specimens illustrating the art department of the Illustrated London News. 306
- 25 Rola, Vincent, Bayswater.—Method for the piano, with diagrams and specimens of music. 306
- 26 Proprietors of the "Graphic," London.—Process of producing an illustrated newspaper, from the receipt of sketches to the final issue of printed sheets to the public. 306
- 27 Holdsworth, Edmund William Hunt, London.—Work on deep sea fishing and fishing boats. 306
- 28 Johnson, J. M., & Sons (limited), London.—Printing in color, show tablets. 306
- 29 Day & Son, London.—Chromo-lithography. 306
- 30 Rundell, Joseph Benjamin, South Kensington Museum, London.—Short-hand alphabet; maps, plans, etc., for educational atlases and other purposes; lithographic printing as applied to maps. 306
- 31 Paul, William, Waltham Cross, Herts.—Works on horticulture. 306

Scientific Instruments.

- 32 Siemens, Charles William, London.—Pyrometers. (In Mackinnon Hall.) 300
- 33 Lyon, Washington, London.—Calculating table for rapidly multiplying numbers above 12. 301

Watches, Scientific and Musical Instruments.

- 34** Wier, M. A., & Co., London.—Hydro-gyrometer or revolution indicator. 321
- 35** Morton, George, London.—Chronometer and watch balance springs, wire, and gauge. 322
- 36** Smith, Borthwick, London.—Watches and chronometers, cases, dials, and movements; rink and parlor skates; tools and machinery for watch manufacture. 323
- 37** Sewill, J., Liverpool.—Marine chronometers and watches. 323
- 38** Mercer, Thomas, London.—Marine chronometers. 323
- 39** Kullberg, Victor, London.—Marine chronometers, watches, chronographs, repeaters, etc. 323
- 40** Dent, M. F., London.—Marine chronometers, watches, chronometer clocks, etc. 323
- 41** Whittaker, Richard, London.—Keyless watches. 323
- 42** Poole, James, & Co., London.—Marine chronometers and watches. 323
- 43** Nicolle, Nielsen, & Co., London.—Watches, chronometers, complicated watches, and chronographs. 323
- 44** Claxton, Robert, London.—Chronometer jewelings in all stages. 323
- 45** Frodsham, Charles, & Co., London.—Watches, clocks, and chronometers for astronomical purposes; pocket and marine chronometers. 323
- 46** Swift, James, London.—Microscopes and apparatus. 324
- 47** Middleton, Thomas John, London.—Magic lanterns, dissolving view apparatus, dissolving top for the oxyhydrogen lime light, lantern slides, etc. 324
- 48** Beck, R. & J., London.—Microscopes, telescopes, race glasses, surveying and meteorological instruments and tools. 324
- 49** Wheeler, Edmund, London.—Specimens for the microscope. 324
- 50** Dallmeyer, John Henry, London.—Astronomical and terrestrial telescopes, microscopes, photographic lenses, cameras, and apparatus. 324
- 51** Ross & Co., London.—Microscopes, monocular and binocular apparatus, object glasses, telescopes, and photographic lenses. 324
- 52** Crouch, Henry, London.—Microscopes, binocular, and with complete accessories for every class of scientific investigation; cabinets, lamps. 324
- 53** India Rubber, Gutta Percha, and Telegraph Works Co. (limited), Silvertown, Essex.—Telegraph cables, insulated telegraph wires. 325
- 54** Siemens Brothers, London.—Cable samples, and gutta percha as applied to the manufacture of cables. 325
- 55** Heaps, John Knowles, Holbeck, Leeds.—Violin and violoncello. 327
- 56** Smith, George, South Hackney.—Portable finger organ. 327
- 57** Boosey & Co., London.—Musical wind instruments, percussion instruments for bands; band, choral, and household music. 327
- 58** Brinsmead, John, & Sons, London.—Grand, semi-grand, upright, and studio pianos; check repeater action for upright and grand pianos. 327
- 59** Collmann, Leonard W., London.—Cottage piano. 327
- 60** Besson, F., & Co., London.—Brass musical instruments. 327
- 61** Browne, H. Justin, London.—Upright cottage piano fortés. 327
- 62** Rudell, Carte, & Co., London.—Gold, ebonite, cocoa wood, and silver cylinder flutes. 327
- 63** Cochrane, Robert C. E., Athlone, Ireland.—Drawings illustrating the application of concrete to the erection of an improved construction of dwellings. 324

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Educational Systems, Methods, and Libraries.	Engineering, Architecture, Maps, etc.
1 Mechanics' School of Arts, Sydney. —Wax seal impression of corporate seal. 302	6 New South Wales Commissioners, Sydney. Topographical and geological maps and sections of New South Wales. 335
2 Government Printing Office, Sydney, New South Wales. <i>a</i> Meteorological results, and report on education. 305	Physical, Social, and Moral Condition of Man.
3 Government gazettes, statutes, statute index, specifications of patents, parliamentary hand book, blue book and statistical register, census, reports on railways, Rae's poems, newspapers, Australian languages. 306	7 Government Printing Office, Sydney. —Industrial progress of New South Wales; transactions of Royal Society. 347
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8 New South Wales Commissioners, Sydney. —Birds of Australia, prepared by Thorpe. 312	1 The Commission. —Photographic views of public buildings, scenery, etc., in and around Sydney, N. S. W. 430
4 Trustees of the Australian Museum, Sydney. —Specimens of natural history of Australia. 312	2 Richards, T., Sydney. 430 <i>a</i> Photographic views of buildings, etc., in and around Sydney.
Scientific and Philosophical Instruments and Methods.	3 Photographic views of Blue Mountains and valley of the Grose. <i>c</i> Photographic views of entomological collection of New South Wales.
5 Parrot, T. S., Sydney. —Semaphore, an instrument designed for army signalling purposes. 326	3 Degotardi, John, Sydney. —Photo-mechanical printing. 431
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	1 Postle, Sydney. —Ice machine. 568

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Educational Systems, Methods, and Libraries.	5 Ferres, John, Government Printer, Melbourne. —Reports and statistics from the principal government institutions of Melbourne; Victorian newspapers. 305
1 Educational Department of Victoria, Melbourne. —Photographic views of state schools in Victoria. 300	6 Warrnambool, Borough Council for Warrnambool. —Statistics of the borough. 325
2 Commissioners for Victoria, for the Philadelphia Exhibition, Melbourne. —Portfolio of music by W. H. Glen. 302	Scientific and Philosophical Instruments and Methods.
3 Victorian Asylum and School for the Blind, Melbourne. —Baskets, perambulators, portmanteaus, trunks, mats, fancy wool-work, etc., made by the pupils. 303	7 Commissioners for Victoria, for the Philadelphia Exhibition, Melbourne. —Bell and stand. 327
4 Commissioners for Victoria, for the Philadelphia Exhibition, Melbourne. —Official records, catalogues, lectures, reports, medical works, school books, sermons, and general literature. 304	8 Kilner, Joseph, Richmond. —Piano forte. 327

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- 9** Commissioners for Victoria, for the Philadelphia Exhibition, Melbourne.—Miscellaneous maps, etc. 330
10 Surveyor-General of Victoria, Melbourne.—Maps and plans of the colony of Victoria. 330
- Physical, Social, and Moral Condition of Man.**
- 11** Commissioners for Victoria, for the Philadelphia Exhibition, Melbourne.
 a Patent ceiling ventilator, model of Victorian bush residence, with huts and various kinds of fencing. 342
 b Sovereigns and half-sovereigns from Royal Victorian mint, Melbourne. 344

- c Baskets, mats, etc., made at Coranderrk aboriginal mission station; vocabulary of Victorian aboriginal dialects, bluestone tomahawk, photographs of Victorian aborigines. 347
 d Victorian and English ensigns. 349
12 Bank of Victoria, Melbourne.—Bank notes and statistics of the bank. 344
13 Commercial Bank of Australia, Melbourne.—Bank notes, photographs, and statistics of the bank. 344
14 National Bank of Australasia, Melbourne.—Bank notes and statistics of the bank. 344
15 Penal Department, Inspector-General of Melbourne.—Warder's uniform, prisoners' clothing, hats, boots, shoes, mats, etc. 345

CANADA.

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Educational Systems, Works, and Appliances.**Educational Systems, Methods, and Libraries.**

- 1** Merritt, J. P., St. Catherine's, Ont.—Metric and chronological tables, chronicle of Canada. 300
2 Tennant & McLachlan, Hamilton, Ont.—Penmanship. 300
3 Pearse, James, Chatham, Ont.—Penmanship. 300
4 Browne, James, Toronto, Ont.—Chart stand and illustrator. 300
5 Crooks, A., Toronto, Ont.—Educational department of Ontario. 300
6 Beatty, L. J., Belleville, Ont.—Penmanship. 300
7 Hector, Thos., Ottawa, Ont.—Rotary polar map of the world. 300
8 Genest, P. M. A., Quebec, Q.—Map of "La Nouvelle France." 300
9 Tackabury, J. N., Montreal, Q.—Dominion atlas, maps of Ontario and Quebec. 300
10 Leroy, P., Quebec, Q.—System of education. 300
11 Baillarge, Ch., Quebec, Q.—Stereometrical tableau. 300
12 English, Ch., St. John, N. B.—Composition blackboard. 300
13 Hill, C. P., Halifax, N. S.—Photograph Halifax Industrial School. 300
14 Burgess, Th., Toronto, Ont.—North-west specimens of botany. 301
15 McGill University, Montreal, Q.—Calendars, medals, photographs of universities. 301
16 Université Laval, Quebec, Q. 303
17 College Nicolet, Nicolet, Q. 303

- 18** Maîtrise St. Pierre, Montreal, Q. 303
19 Ecole du Plateau, Montreal, Q. 303
20 Collège St. Hyacinthe, St. Hyacinthe, Q. 303
21 Séminaire Ste. Thérèse, Ste. Thérèse, Q. 303
22 Collège Joliette, Joliette, Q. 303
23 Séminaire de Remouski, Remouski, Q. 303
24 Ursulines, Quebec, Q. 303
25 Ursulines, Trois-Rivières, Q. 303
26 Convent Hochelaga, Hochelaga, Q. 303
27 Convent Longueuil, Longueuil, Q. 303
28 Académie des S. S. Anges, Montreal, Q. 303
29 Providence, Montreal, Q. 303
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31 Hotel Dieu, Montreal, Q. 303
32 Hotel Dieu, Quebec, Q. 303
33 Hôpital Général, Quebec, Q. 303
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39 Convent de Sillery, Quebec, Q. 303
40 Campbell, James, Toronto, Ont.—Books. 306
41 Weid, W., London, Ont.—Farmer's Advocate. 306
42 Lovell Printing and Publishing Co., Montreal, Q.—School and other books. 306
43 Webster, Geo., Hamilton, Ont.—Bible, printed. 306

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F R A N C E.

(North of Nave, Columns 39 to 53.)

Educational Books, Systems, Furniture.

Educational Systems, Methods, and Libraries.

- | | | | |
|--|-----|---|-----|
| 1 Godchaux, Auge., & Co., Paris.—Copy books for schools. | 300 | 27 Dumaine, J., Paris.—Military books. | 306 |
| 2 Rives, Paris.—School furniture. | 300 | 28 Ducrocq, P., Paris.—Children's books. | 306 |
| 3 Bapterosses, F., Paris.—School materials. | 300 | 29 Ducher & Co., Paris.—Works on art and architecture; chromo-lithographs, engravings, and photographs. | 306 |
| 4 Desbarolles, Paris.—Works on penmanship. | 300 | 30 Didier & Co., Paris.—Academical books. | 306 |
| 5 Delalain, J., & Son, Paris.—School books in different languages. | 300 | 31 "Gazette des Beaux Arts," Paris.—Specimens of the paper and its engravings. | 306 |
| 6 Godchaux, Aug., & Co., Paris.—Copy books. | 300 | 32 Gauthier-Villars, Paris.—Scientific books. | 306 |
| 7 Le Brun, Paris.—Elementary dictionaries. | 300 | 33 Furne, Joubet, & Co., Paris.—General literature. | 306 |
| 8 Lagout, Nogent-sur Seine (Aube).—School materials. | 300 | 34 Firmin-Didot & Co., Paris.—Printing and stationery. | 306 |
| 9 Leroy, P., Brides-les-Bains, near Moutiers (Savoy).—Educational system. | 300 | 35 Laboulaye, Ch., Paris.—Dictionary of arts and manufactures, and works concerning industrial art. | 306 |
| 10 Maitrepierre, Paris.—Copy books. | 300 | 36 Jouast, D., Paris.—Fine stationery. | 306 |
| 11 Raybaud, Draguignan (Var).—Reading method. | 300 | 37 Jacquemin, Paris.—Historical costumes. | 306 |
| 12 Touron, Emile, Bois de Colombes (Seine).—Geometrical problems. | 300 | 38 Hetzel, J., & Co., Paris.—Books. | 306 |
| 13 Taulard, Principal of Menelou-Salon School, Menelou-Salon (Cher).—Pupils' work. | 300 | 39 Hennuyer, Paris.—Books. | 306 |
| 14 Rives, Paris.—School materials. | 301 | 40 Hachette & Co., Paris.—Illustrated works. | 306 |
| 15 Mouret, Paris.—Globe. | 301 | 41 Guillaumin & Co., Paris.—Works on political economy and finance; "Journal des Economistes." | 306 |
| 16 Levesque, Villeneuve St. Denis (Seine and Marne).—Metrical system. | 301 | 42 Guérin, L., & Co., Paris.—Works on science and art. | 306 |
| 17 Eloffe & Co., Paris.—Works on natural history; terrestrial globes. | 301 | 43 Lemerre, Alphonse, Paris.—Classical works. | 306 |
| 18 Level, Paris.—Metrical and graphic systems. | 301 | 44 Desteract, A., Paris.—Account books. | 306 |
| 19 Le Cointe, Evreux (Eure).—Arithmetical problems. | 302 | 45 Leroy, Andre, Angers (Maine and Loire).—Pomological dictionary. | 306 |
| 20 National School of Engineering, Paris.—Documents and reports of the school. | 302 | 46 Leroy, P. N., Paris.—Illustrated historical works. | 306 |
| 21 National School of Mines, Paris.—Documents and reports of the school. | 302 | 47 Maisonneuve & Co., Paris.—Books. | 306 |
| 22 Métilot, A., Paris.—Music method. | 302 | 48 Loones, Paris.—History of painters. | 306 |
| 23 Dauphin, Lunéville (Meurthe and Moselle).—Printing in relief for the blind. | 303 | 49 Maison Rustique Agricultural Library, Paris.—Works on agriculture and horticulture. | 306 |
| 24 Dupont, Paul, Paris.—Works on government and education. | 306 | 50 Mareil, H. De, New York.—Work on the commerce and industry of the United States. | 306 |
| 25 Deployé Brothers, Paris.—System of stenography. | 306 | 51 Mame, A., & Son, Tours.—Classical works. | 306 |
| 26 Dunod, Paris.—Classic and scientific publications. | 306 | 52 Masson, G., Paris.—Works on medicine, natural history, etc. | 306 |

EDUCATION AND SCIENCE.

Publications, Scientific Instruments, Watches.

- 53 Morel, Mrs. A., & Co., Paris.**—Works on architecture. 306
- 54 Pion & Co., Paris.**—Illustrated works on history, jurisprudence, etc. 306
- 55 Delahaye, V. A., & Co., Paris.**—Works of the Biological Society and the Anatomical Society of Paris. 306
- 56 Delagrange, Ch., Paris.**—Geographical and classical books. 306
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- 2 Board of Education of the Canton of Basle City.—Annual accounts of the department of public instruction, reports and prospectus of the schools, school-books, plans of the Bernoullianum, special schools. 300
- 3 Board of Education of the Canton of Berne.—Obligatory and facultative text-books and apparatus used in elementary and higher schools, laws and regulations, reports and plans. 300
- 4 Board of Education of the Canton of Fribourg.—Laws and regulations, books, maps, and plans. 300

- 5 Board of Education of the Canton of Geneva.—Obligatory and facultative text-books and apparatus used in elementary and higher schools, laws and regulations, reports and plans. 300
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- 7 Board of Education of the Canton of Neuchâtel.—Laws and regulations, books, maps, and plans. 300
- 8 Board of Education of the Canton of Solothurn.—Laws and regulations, books, maps, and plans. 300
- 9 Board of Education of the Canton of Zurich.—Obligatory and facultative series of books and apparatus used in elementary and higher schools, models and maps for instruction in drawing, laws and regulations, reports and plans. 300

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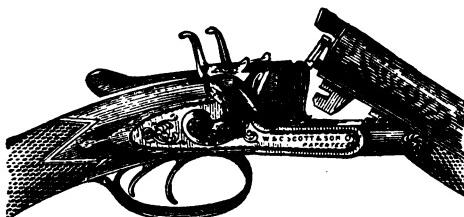
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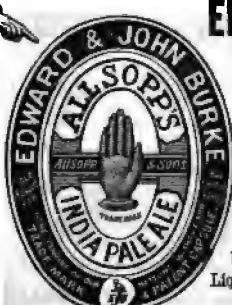
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1 Arens, Antoine, Namur.—School-books. 300.	14 Stroesser, Jean-Pierre, Brussels.—Solids represented in profile by metallic wire. 302
2 Crevecoeur, Henri Stanislas Joseph, Orp-le-Grand (Brabant).—Statistical lists for school teachers. 300	15 Van der Molen, A., & Co., Brussels.—Works on architecture and sculpture. 302
3 Genoëseaux, Louis, Bruges.—School books. 300	16 Lebon, Leon, Brussels.—Educational works. 305
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5 Happel, J., Antwerp.—Adjustable desk, perambulators. 300	18 Mertens, Adolphus, Brussels.—Books, engravings, etc. 305
6 Landrien, Bernardin, Mechlin.—School books. 300	19 Callewaert Bros., Brussels.—School books, Callewaert's dictionaries. 306
7 Licot, Feuillien, Nivelles (Brabant).—Work on drawing. 300	20 De Cuypere, C., & Noblet, A., Liège.—Works on mining, etc. 306
8 Lory, Delaet, Pierre, Brussels.—Writing method adopted by the Belgian government. 300	21 De Koninck, Laurence Wm., Liège.—Works on paleontology. 306
9 Petry, Adolphe, Mons (Hainaut).—Arithmometer. 300	22 Destexhe, A. M. T. J., Modave, Province of Liège.—Works on instruction. 306
10 Stebert, Pierre, Tongres, Limbourg.—Essay on education, etc. 300	23 Dujeux, J. B. C., Brussels.—Special collection of patents. 306
11 Van Haevermaet, Henry, Brussels.—Furniture used in orphan asylums. 300	24 Landrien, Bernardine, Mechlin.—School books. 306
12 Claesens, Ch., Liège.—Works on art. 302	25 Manceaux, Hector, Mons (Hainaut).—School books. 306
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	27 Van Holsbeek, Henry, Brussels.—Works on hygiene. 306

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 30 Tochomst Society, Antwerp.—Reports, etc. 310
 31 Vander Maele, Joseph, Molenbeek St. Jean, near Brussels.—Geographical works. 310
 32 Namur Artistic Literary Club, Namur.—Annals of the club. 311
 33 Entomological Society of the Royal Museum of Natural History of Belgium, Brussels.—Reports, etc. 311
 34 Limbourg Scientific and Literary Society, Limbourg.—Publications. 311
 35 Artists' Union, International Club of Fine Arts, Liège.—Statutes, etc. 311
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- 37 Glaesener, Michael, Liège.—Physical instruments. 324
 38 Tyskiewicz, Count T. J. C., Brussels.—Apparatus for instruction in fine arts. 320
 39 Le Boulenge, Paul Emile, Liège.—Telemeter for the battle-field. 321
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 42 Scheren, O. F., Liège.—Platform scales. 322
 43 Glaesener, Michael, Liège.
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 44 Mahillon, C., Brussels.—Wind instruments. 326
 45 Meerens, Charles, Brussels.—Music and musical works. 327
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 47 Le Tellier, Adolphus, Saint Gilles, near Brussels.—Filters. 330
- 48 Roelens, Désiré, Ghent.—Plan of a hot-house, heating apparatus with thermosyphon. 715
 49 Smits, Constantine, Forest, near Brussels.—Model of a park, bird's-eye view, leveling, etc. 730
 50 Dewalque, G., Liège.—Geological chart. 335
 51 Malaise, C. H. G. L., Gembloux.—Agricultural chart. 335
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 59 Warlomont, Dr., Brussels.—Vaccine and its distribution to physicians. 346
 60 Permanent Commission of Mutual Relief Associations, Belgium.—Reports, etc. 347
 61 Laurent, Francis, Ghent.—Works on the improvement of the working classes. 347
 62 Mechlin Savings Bank, Mechlin.—Reports, etc. 347
 63 Schoenfeld, H., Brussels.—Reports, etc., of the Belgian Medical Profession Pension Fund. 347
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- 1 Tjeenk-Willink, H. A., Arnhem.—Earth globes with zinc balls. 300
- 2 The Book Trade, Amsterdam.—Books, school books, newspapers, and periodicals. 300
- 3 Deutgen, L., Groningen.—Paper school board. 300
- 4 Art School, Rotterdam.—Drawings and designs. 300
- 5 Kolkon, F. J. von, Groningen.—Photographs on glass. 300
- 6 Workmen's Art School, Amsterdam.—Drawings. 302
- 7 Verhaar, A. T., Utrecht.—Plaster casts of cattle that died of murrain in 1865. 302
- 8 Workmen's Society, Amsterdam.—Drawings by pupils. 302
- 9 Deaf and Dumb Institute, Groningen.—Reports, 1790-1875. 303
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- 15 Society for the Promotion of Architecture, Amsterdam.—Works on architecture. 311
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- 19 Dutch Historical and Botanical Association, Amsterdam.—Pamphlets. 312
- 20 Amersfoordt, Mrs. H. M., Badhoeve. —“Oratorio”—God's Ubiquity. 313
- 21 Van Gelder, G. M., Schaerbeek.—Piano forte method. 313
- 22 North Holland Musical and Historical Association, Amsterdam.—Publications. 313

- 23 Roothaan, L., Amsterdam.—Musical instruments. 313

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- 27 Kerbel, G. H., Amsterdam.—Model of a steam engine. 320
- 28 Van Wetteren, H., Haarlem.—Magnets. 320
- 29 Beins, H., Groningen.—Chemical and physical apparatus. 320
- 30 Muller, J. A., Amsterdam.—Water gauge. 321
- 31 Betou, P. J., Delft.—Instrument measuring tooth part of a millimetre. 321
- 32 Hohwü, A. & T., Amsterdam.—Chronometers and astronomical clock work. 323
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1 Abraham, Aug., Mäss Floda.—Work by pupils of Mäss School of Home Industry for Boys and Girls.	300
2 Alard, A. F., Sirntuna.—Musical staff table.	300
3 Bagge, G. B., Paris, France.—Geographical map.	300
4 Berggren, A. N., Stockholm.—Method of penmanship.	300
5 Cervin, C. G., Hesselby, Stockholm.—Model of a school-house.	300
6 Glömska Manufactury, Huddinge.—Universal school form.	300
7 Royal Centennial Commission, Stockholm.—A primary school-house, with accessories of furniture, books, maps, and apparatus for instruction.	300
8 Royal Centennial Commission, Stockholm.—Models of elementary school-houses, gymnastical apparatus, etc.	300
9 Larsson, J. M., Stockholm.—Geographical maps.	300
10 Winslow, A. P., Göteborg.—Herbarium for schools.	300
11 Londer, A., Norrköping.—Drawings of gymnastics.	300
12 Ostorberg, C. G., Jäder Eskilstuna.—School furniture.	300
13 Brunius, C. G., Stockholm.—Printed matters in archaeology and architecture.	301
14 Fries, Th. M., & Nathorst, A. G., Stockholm.—Spitzbergen herbarium.	301
15 Ramsay, Ebba, Mrs., Göteborg.—Drawings of Spitzbergen plants.	301
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21 Örebro.—Works of pupils.	302
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- 38 Norstedt & Sons, Stockholm.—Typographical productions.** 306
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- 47 Rose, J. L., Upsala.—Magnets and needle-compass for mines.** 320
- 48 Theorell, A. G., and Sörensen, P. M., Stockholm.—Meteorograph.** 320
- 49 Viberg, Martin, Stockholm.**
A "Bull-dog apparatus" for deep-sea soundings. 320
- 50 Brehmer, E. F. A., Stockholm.—Railway ticket registering apparatus; paging machine.** 321
- 51 Ekman, F. L., Stockholm.—Anemometer, rainmeter.** 321
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Education and Science.

Educational Systems, Methods, and Libraries.	
1	Bergen Common School Board, Bergen.—Collection of materials for a free school. 300
2	Sandberg, Andreas, Cand. mag., Christiania.—Models of handwriting. 300
3	Boeck, W., and D. C. Danielassen, Christiania and Bergen.—Treatise on skin diseases. 306
4	Danielassen, D. C., and W. Boeck, Christiania and Bergen.—Treatise on the elephantiasis. 306
5	The Norwegian Association of Tourists, Christiania.—Books, maps, photographs. 306
6	Jensen, H. J., Christiania.—“The Illustrated News” and other illustrated works. 306
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7	Wedel Jarlsberg, Ferd., Commodore of the Norwegian Navy, Christiania.—Patent control compasses, log machine. 320
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19	Bucher, Henr., Bergen.—Topographical map, new system. 335
20	Collett, Robert, Assistant of the Zoological Museum, Christiania.—Zoo-geographical map of Norway, containing a complete list of the vertebrate animals of the country. 335
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24	Hagen, J., Christiania.—Leather and skins. 652

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Publications, Institutions, Scientific and Musical Instruments, Engineering

Educational Systems, Methods, and Libraries.

- 1 Angelini, Prof. Rodolfo, Rome.—Specimens of penmanship. 300
- 2 Mainieri, Carlo, Milan.—Geographical map in relief. 300
- 3 Ben, Michelangiolo, Verona.—Mathematical maps. 300
- 4 Villa, Cav. Prof. Ignazio, Milan.—Geographical maps. 300
- 5 Palizzolo Gravina, Baron Vincent, Palermo.—Scientific books. 301
- 6 Filopanti, Dr. Prof. Quirico, Bologna.—Book on philosophy. 301
- 7 Italo, Dr. Enrico, Milan.—Objects for the study of geography and other sciences. 301
- 8 Giordano, Prof. Scipione, Turin.—Materia medica. 302
- 9 Perelli, Prof. Luigi, Milan.—Album, with specimens of stenography. 302
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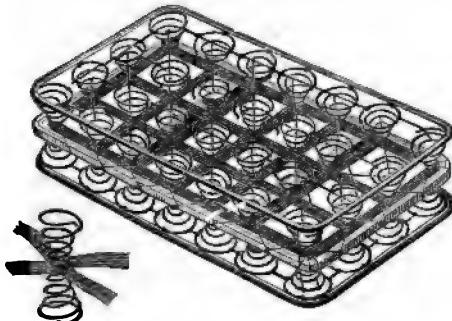
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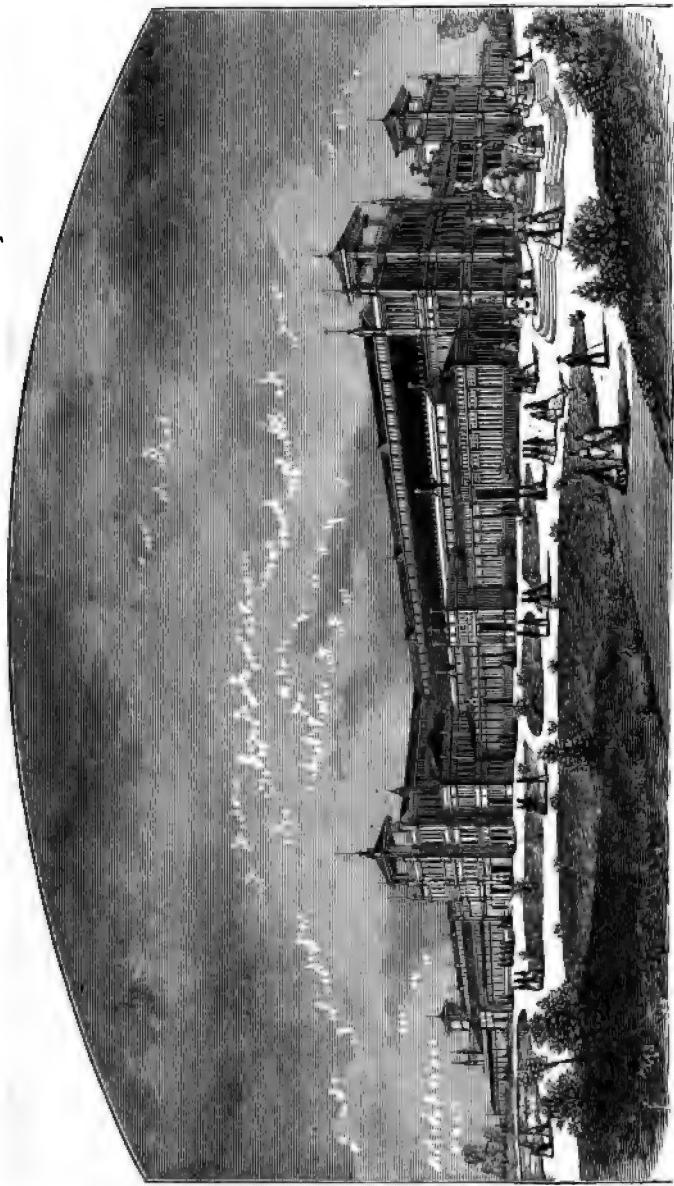
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MACHINERY HALL.

UNITED STATES CENTENNIAL COMMISSION.

INTERNATIONAL EXHIBITION,

1876.

OFFICIAL CATALOGUE

DEPARTMENT OF MACHINERY.

PHILADELPHIA:

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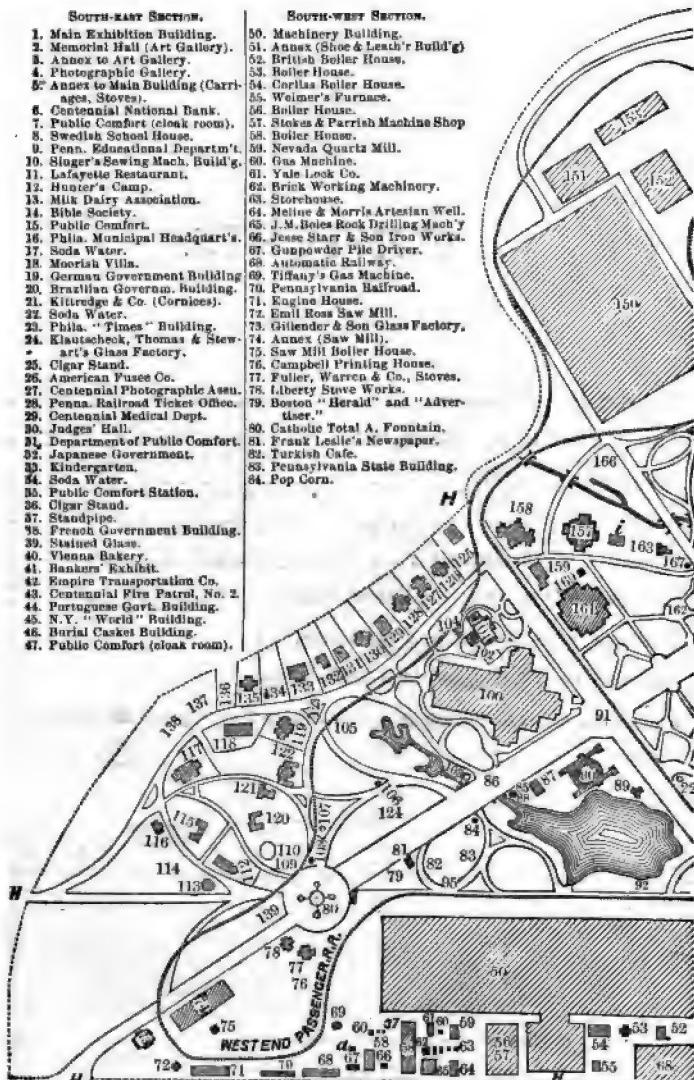
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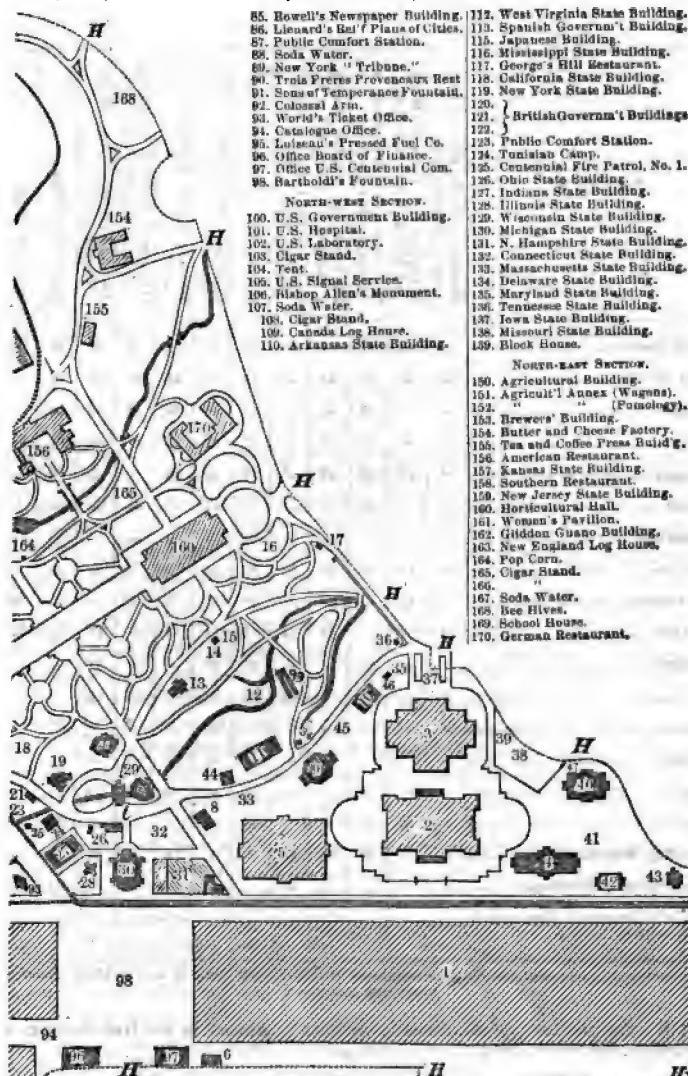
SOUTH-EAST SECTION.

1. Main Exhibition Building.
2. Memorini Hall (Art Gallery).
3. Annex to Art Gallery.
4. Photographic Gallery.
- 5th Annex to Main Building (Carriages, Stoves).
6. Centennial National Bank.
7. Public Comfort (cloak room).
8. Swedish School House.
9. Penna. Educational Departm't.
10. Slager's Sewing Mach. Build'g.
11. Lafayette Restaurant.
12. Hunter's Camp.
13. Penna. Dept. of Association.
14. Bible Society.
15. Public Comfort.
16. Phila. Municipal Headquar't.s.
17. Soda Water.
18. Moorish Villa.
19. German Government Building.
20. Brazilian Government Building.
21. Kittredge & Co. (Cornices).
22. Soda Water.
23. Philadelphia Times Building.
24. Kautzschek, Thomas & Stewert's Glass Factory.
25. Cigar Stand.
26. American Fuses Co.
27. Centennial Photographic Assn.
28. Penna. Railroad Ticket Office.
29. Centennial Medical Dep't.
30. Judge Hall.
31. Department of Public Comfort.
32. Japanese Government.
33. German Government.
34. Soda Water.
35. Public Comfort Station.
36. Cigar Stand.
37. Standpipe.
38. French Government Building.
39. Stained Glass.
40. Vienna Bakery.
41. Bankers' Exhibit.
42. Empire Transportation Co.
43. Gandy Bros. Plan Farm, No. 2.
44. Portuguese Govt. Building.
45. N. Y. "World" Building.
46. Burial Casket Building.
47. Public Comfort (cloak room).

SOUTH-WEST SECTION.

50. Machinery Building.
51. Annex (Shoe & Leath'r Build'g)
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53. Boiler House.
54. Carlisle Boiler House.
55. Weimer's Furnace.
56. Boiler House.
57. Stokes & Parrish Machine Shop
58. Boiler House.
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60. Gas Machine.
61. Yale Lock Co.
62. Brisk Working Machinery.
63. Dorey's Machine Shop.
64. Meine & Morris Artesian Well.
65. J. M. Boles Rock Drilling Mach'y
66. Jesse Starr & Son Iron Works.
67. Gunpowder Pile Driver.
68. Automatic Railway.
69. Tiffany's Gas Machine.
70. Pennsylvania Railroad.
71. Engine House.
72. Emil Ross Saw Mill.
73. Emil Ross San Glass Factory.
74. Ammer (Saw Mill).
75. Saw Mill Boiler House.
76. Campbell Printing House.
77. Fuller, Warren & Co., Stores.
78. Liberty Stave Works.
79. Boston "Herald" and "Advertiser."
80. Catholic Total A. Fountain.
81. Frank Leslie's Newspaper.
82. Turkish Cafe.
83. Pennsylvania State Building.
84. Pop Corn.





INTERNATIONAL EXHIBITION.

SUBJECT INDEX, NATIONAL EXHIBITS.

NATIONS.

	Machines, Tools, etc., of Mining, Chemistry, etc.	Machines and Tools for Working Metal, Wood, and Stone.	Machines and Implements of Spinning, Weaving, etc.	Machines, etc., used in Sewing, Making Clothing, etc.	Machines for Printing, Making Books, Paper-making.	Motors, Power Generators, etc.	Hydraulic and Pneumatic Apparatus.	Railway Plant, Rolling-Stock, etc.	Machinery used in Preparing Agricultural Products.	Aërial, Pneumatic, and Water Transportation.	Special Buildings.	Women's Work.
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• Railway-plant, cars, etc., are largely exhibited in the Annex (No. 5) to the Main Building catalogue, page 300.

N. B.—The Machinery of the following countries is installed in the Main Building, and catalogued in that volume, viz.:

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Denmark.....	210
New South Wales.....	270
Switzerland.....	286

MACHINERY HALL. No. 50.

Size, 360 by 1402 feet; annex, 208 by 210 feet.

Engineers and Architects, HENRY PETTIT, JOSEPH M. WILSON, Philadelphia.

Contractor, PHILIP QUIGLEY, Wilmington, Del.

Wrought and cast iron furnished by PUSEY, JONES, & Co., Wilmington, Del.

MACHINERY HALL is located west of the intersection of Belmont and Elm avenues, at a distance of 542 feet from the west front of the Main Exhibition Building, and 274 feet from the north side of Elm avenue. The north front of the building is upon the same line as that of the Main Exhibition Building, thus presenting a frontage of 3824 feet from the east to the west ends of the exhibition buildings upon the principle avenue within the grounds.

The principal portion of the structure is one story in height, showing the main cornice upon the outside at 40 feet from the ground, the interior height to the top of the ventilators in the avenues being 70 feet, and in the aisles 40 feet. To break the long lines upon the exterior, projections have been introduced upon the four sides, and the main entrances finished with facades, extending to 78 feet in height. The east entrance forms the principal approach from street-cars, from the Main Exhibition Building, and from the Pennsylvania Railroad depot. Along the south side are the boiler houses and other buildings for special kinds of machinery. The west entrance affords the most direct communication with George's Hill, which point affords the best view of the entire exhibition grounds.

The arrangement of the ground plan shows two main avenues 90 feet wide by 1360 feet long, with a central aisle between, and an aisle on either side. Each aisle is 60 feet in width; the two avenues and three aisles making the total width of 360 feet. At the centre of the building is a transept of 90 feet in width, which at the south end is prolonged beyond the Main Hall. This transept, beginning at 36 feet from the Main Hall and extending 268 feet, is flanked on either side by aisles of 60 feet in width, and forms the annex for hydraulic machines. The promenades in the avenues are 15 feet in width, in the transept 25 feet, and in the aisles 10 feet. All other walks extending across the building are 10 feet in width, and lead at either end to exit doors.

The foundations consist of piers of masonry. The superstructure consists of solid timber columns supporting roof trusses, constructed with straight wooden principals and wrought iron ties and struts. As a general rule, the columns are placed lengthwise of the building, at the uniform distance apart of 16 feet. The columns are 40 feet high to the heel block of the 90 feet span roof trusses over the avenues, and they support the heel of the 60 feet spans over the aisles at the height of 50 feet. The outer walls are built of masonry to a height of five feet, and above that are composed of glazed sash placed between the columns. Portions of the sash are movable

for ventilation. Louvre ventilators are introduced in continuous lengths over both the avenues and the aisles. The building is lit entirely by side light.

The motive power is furnished by a Corliss engine of 1400 horse power. There are eight main lines of shafting, extending almost the entire length of the structure, and countershafts are introduced into the aisles where needed. The hangers are attached at the height of 20 feet from the floor.

The annex for hydraulic machines contains a tank 60 feet by 160 feet, with depth of water of 10 feet. In this hydraulic machinery is exhibited in full operation. At the south end of this tank is a waterfall 35 feet high by 40 feet wide, supplied from the tank by the pumps upon exhibition.

The contract in the erection of Machinery Hall was made January 27th, 1875, and the building was begun forthwith, and finished October 1st, 1875. The cost was \$543,300. The exhibition area covers about 14 acres.

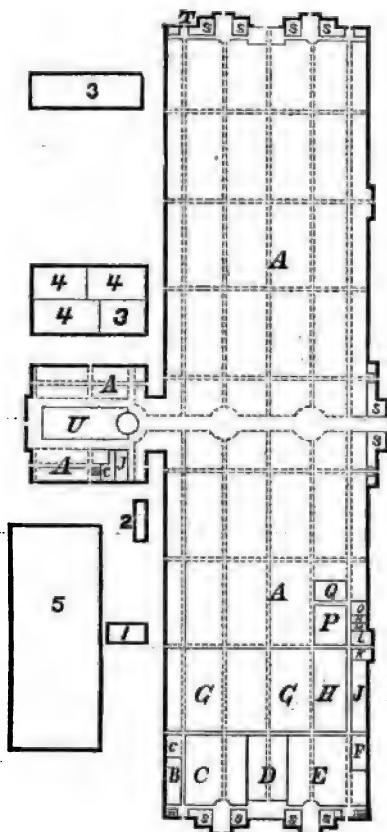
KEY TO THE NOTATION.

THE location of objects in the Machinery Building is shown by a letter and figure, indicating the nearest column of the building. The letters—A, B, C, to F—designate the successive ranges of columns, proceeding northward from the southern wall across the width of the building; the figures, the number of the column in each range, counting westwardly from the eastern wall, the entire length of the building, from 1 to 88. Thus C 5 is the column in the third range from the south, and the fifth from the eastern end of the building. The northwesternmost column is F 88.

The class of the classification to which each exhibit belongs is indicated by the small figures at the end of the line.

MACHINERY HALL.

Scale, 300 ft. to 1 in.



- A United States.
- B Austria.
- C German Empire.
- D Canada.
- E France.
- F Spain.
- G Great Britain.
- H Belgium.
- I Sweden.
- K Denmark.
- L Italy.
- M Chili.
- N Norway.

- O Argentine Confederation.
- P Brazil.
- Q Russia.
- R Switzerland.
- S Restaurants, etc.
- T Ladies' Waiting-room.
- U Tank.
- 1. English Boiler-house.
- 2. Cortiss Boiler-house.
- 3. Boiler-houses.
- 4. Machine Shop and Annex.
- 5. Shoe and Leather Shop.

Length, 1402 ft. Width, 360 ft. Height of Avenues, 70 ft. Height of Aisles, 40 ft.

SYNOPSIS OF THE CLASSIFICATION.

LOCATION.	DEPARTMENTS.	CLASSES.	GROUPS.
MAIN BUILDING.	I. MINING AND METALLURGY.	100—109 110—119 120—129	Minerals, Ores, Stone, Mining Products. Metallurgical Products. Mining Engineering.
	II. MANUFACTURES.	200—205 206—215 216—227 228—234 235—241 242—249 250—257 258—264 265—271 272—279 280—284 285—291 292—296	Chemical Manufactures. Ceramics, Pottery, Porcelain, Glass, etc. Furniture, etc. Yarns and Woven Goods of Vegetable or Mineral Materials. Woven and Felted Goods of Wool, etc. Silk and Silk Fabrics. Clothing, Jewelry, etc. Paper, Blank Books, Stationery. Weapons, etc. Medicine, Surgery, Prothesis. Hardware, Edge Tools, Cutlery, and Metallic Products. Fabrics of Vegetable, Animal, or Mineral Materials. Carriages, Vehicles, and Accessories.
	III. EDUCATION AND SCIENCE	300—309 310—319 320—329 330—339 340—349	Educational Systems, Methods, and Libraries. Institutions and Organizations. Scientific and Philosophical Instruments and Methods. Engineering, Architecture, Maps, etc. Physical, Social, and Moral Condition of Man.
ART GALLERY.	IV. ART.	400—409 410—419 420—429 430—439 440—449 450—459	Sculpture. Painting. Engraving and Lithography. Photography. Industrial and Architectural Designs, etc. Ceramic Decorations, Mosaics, etc.
MACHINERY BUILDING.	V. MACHINERY.	500—509 510—519 520—529 530—539 540—549 550—559 560—569 570—579 580—589 590—599	Machines, Tools, etc., of Mining, Chemistry, etc. Machines and Tools for working Metal, Wood, and Stone. Machines and Implements of Spinning, Weaving, etc. Machines, etc., used in Sewing, Making Clothing, etc. Machines for Printing, Making Books, Paper Working, etc. Motors, Power Generators, etc. Hydraulic and Pneumatic Apparatus. Railway Plant, Rolling Stock, etc. Machinery used in Preparing Agricultural Products. Aerial, Pneumatic, and Water Transportation. Machinery, and Apparatus, especially adapted to the requirements of the Exhibition.
AGRICULTURAL BUILDING.	VI. AGRICULTURE.	600—609 610—619 620—629 630—639 640—649 650—662 663—669 670—679 680—689 690—699	Arboriculture and Forest Products. Pomology. Agricultural Products. Land Animals. Marine Animals, Fish Culture, and Apparatus. Animal and Vegetable Products. Textile Substances of Vegetable or Animal origin. Machines, Implements, and Processes of Manufacture. Agricultural Engineering and Administration. Tillage and General Management.
HORTICULTURAL BUILDING.	VII. HORTICULTURE.	700—709 710—719 720—729 730—739	Ornamental Trees, Shrubs, and Flowers. Hot Houses, Conservatories, Graperies. Garden Tools, Accessories of Gardening, Garden Designing, Construction, and Management.

CLASSIFICATION.

DEPARTMENT V.—MACHINERY.

MACHINES, TOOLS, AND APPARATUS OF MINING, METALLURGY, CHEMISTRY, AND THE EXTRACTIVE ARTS.

- CLASS 500.—Rock drilling.
CLASS 501.—Well and shaft boring.
CLASS 502.—Machines, apparatus, and implements for coal cutting.
CLASS 503.—Hoisting machinery and accessories.
CLASS 504.—Pumping, draining, and ventilating.
CLASS 505.—Crushing, grinding, sorting, and dressing. Breakers, stamps, mills, pans, screens, sieves, jigs, concentrators.
CLASS 506.—Furnaces, smelting apparatus, and accessories.
CLASS 507.—Machinery used in Bessemer process.
CLASS 508.—Chemical manufacturing machinery. Electroplating. Paint and powder mills. Blacking and soap-making machinery.
CLASS 509.—Gas machinery and apparatus.

MACHINES AND TOOLS FOR WORKING METAL, WOOD, AND STONE.

- CLASS 510.—Planing, sawing, veneering, grooving, mortising, tonguing, cutting, moulding, stamping, carving, and cask-making machines, etc., cork-cutting machines.
CLASS 511.—Direct acting steam sawing machines, with gang saws. Bark mills.
CLASS 512.—Rolling mills, bloom squeezers, blowing fans. Rivet, nail, bolt, and tack making machinery.
CLASS 513.—Furnaces and apparatus for casting metals, with specimens of work.
CLASS 514.—Steam, trip, and other hammers, with specimens of work, anvils, forges, bellows.
CLASS 515.—Planing, drilling, slotting, turning, shaping, punching, stamping, cutting, and coining machines. Wheel cutting and dividing machines, emery wheels, drills, taps, gauges, dies, etc. Grindstones.
CLASS 516.—Stone-sawing and planing machines, dressing, shaping, and polishing, sand blasts, Tilghman's machines, glass-grinding machines, etc.
CLASS 517.—Brick, pottery, and tile machines. Machines for making artificial stone.
CLASS 518.—Furnaces, moulds, blowpipes, etc., for making glass and glassware.
CLASS 519.—Tools, implements, etc., for working metal, wood, and stone.

MACHINES AND IMPLEMENTS OF SPINNING, WEAVING, FELTING, AND PAPER MAKING.

- CLASS 520.—Machines for the manufacture of silk goods.
CLASS 521.—Machines for the manufacture of cotton goods.
CLASS 522.—Machines for the manufacture of woolen goods, carpets, and tapestry.
CLASS 523.—Machines for the manufacture of linen goods.

CLASSIFICATION.

CLASS 524.—Machines for the manufacture of rope and twine, and miscellaneous fibrous materials.

CLASS 525.—Machines for the manufacture of paper and felting.

CLASS 526.—Machines for the manufacture of india-rubber goods.

CLASS 527.—Machines for the manufacture of mixed fabrics.

CLASS 528.—Machines for the manufacture of wire cloth.

MACHINES, APPARATUS, AND IMPLEMENTS USED IN SEWING AND MAKING CLOTHING AND ORNAMENTAL OBJECTS.

CLASS 530.—Machines used in the manufacture of lace, floor-cloths, fancy embroidery, hair, ribbons, etc.

CLASS 531.—Sewing and knitting machines, clothes, corset, hat, and bonnet making machines.

CLASS 532.—Machines for preparing and working leather.

CLASS 533.—Machines for making boots and shoes.

CLASS 534.—Machines for ironing, drying, scouring, and cleaning.

CLASS 535.—Machines for making clocks and watches.

CLASS 536.—Machines for making jewelry.

CLASS 537.—Machines for making buttons, pins, needles, etc.

CLASS 538.—Pipes for smoking.

MACHINES AND APPARATUS FOR TYPESETTING, PRINTING, STAMPING, EMBOSsing, AND FOR MAKING BOOKS, AND PAPER WORKING.

CLASS 540.—Printing, stamping, embossing, and lithographing presses.

CLASS 541.—Typecasting machines, apparatus of stereotyping.

CLASS 542.—Types and typesetting machines. Type-writing machines.

CLASS 543.—Printers' furniture.

CLASS 544.—Bookbinding machines.

CLASS 545.—Paper-folding machines.

CLASS 546.—Paper and card cutting machines, paper box machines.

CLASS 547.—Envelope machines.

MOTORS AND APPARATUS FOR THE GENERATION AND TRANSMISSION OF POWER.

CLASS 550.—Boilers and all steam or gas generating apparatus for motive purposes.

CLASS 551.—Water-wheels, water engines, hydraulic rams, windmills.

CLASS 552.—Steam, air, or gas engines, electro-magnetic engines.

CLASS 553.—Apparatus for the transmission of power, shafting, belting, cables, transmission of power by compressed air, etc., gearing, cables.

CLASS 554.—Screw propellers, wheels for the propulsion of vessels, and other motors.

CLASS 555.—Implements and apparatus used in connection with motors, steam gauges, manometers, etc. Anti-friction metals.

HYDRAULIC AND PNEUMATIC APPARATUS, PUMPING, HOISTING, AND LIFTING.

CLASS 560.—Pumps and apparatus for lifting and moving liquids.

CLASS 561.—Pumps and apparatus for moving and compressing air or gas.

CLASS 562.—Pumps and blowing engines, blowers and ventilating apparatus.

CLASS 563.—Hydraulic jacks, presses, elevators, lifts, meters, cranes.

CLASS 564.—Fire engines, hand, steam, or chemical, and fire extinguishing apparatus, hose, ladders, and fire-escapes, etc.

CLASS 565.—Beer engines, soda-water machines, bottling apparatus, corking machines.

CLASS 566.—Stop valves, cocks, pipes, etc.

CLASS 567.—Diving apparatus and machinery.

CLASS 568.—Ice machines.

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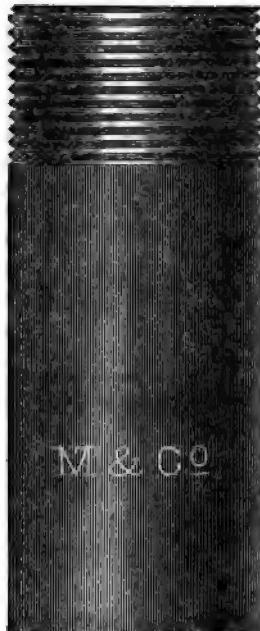
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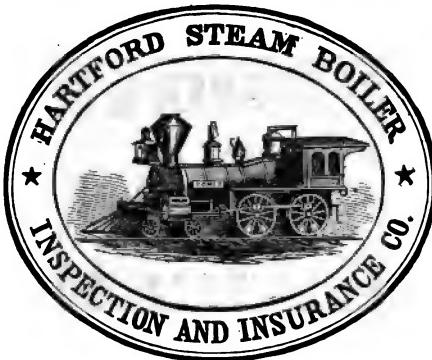
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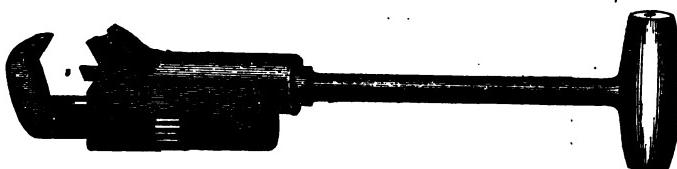
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- 184 Oneida Steam-Engine & Foundry Co., Oneida, N. Y.**—Drill chucks. B 29. 515
- 185 Whiton, David E., West Stafford, Conn.**—Gear-cutting machines, machines for centering iron, lathe chucks, drill chucks, etc. C 31. 515
- 186 Wicaco Screw and Machine Works, Philadelphia, Pa.**—Special machine screws, studs, rolls, punches, dies, drills, taps, reamers, mills, etc. B 37. 515
- 187 Elias & Williams, Brooklyn, N. Y.**—Presses for making tinware and articles of sheet metals. C 30. 515
- 188 Chase, Pliny E., Newark, N. J.**—Back-gearred, screw-cutting, conical-bearing foot lathes, slide rests, and fittings. B 36. 515
- 189 Northampton Emery-Wheel Co., Leeds, Mass.**—Solid emery wheels, and machinery for showing uses. (Annex.) 515
- 190 Prouty, A. B., Worcester, Mass.**—Chucks and jaws for iron planers. C 32. 515
- 191 Racine Hardware Manufacturing Co., Racine, Wis.**—Jewelers' and dentists' polishing and turning lathes, power wheels, engraving blocks, and other tools. C 41. 515
- 192 Newbold, Richard S., & Son, Norristown, Pa.**—Rotary shear for sheet and plate iron. B 33. 515
- 193 Watson, James, Philadelphia, Pa.**—Non-changeable gap lathe. C 31. 515
- 194 Mitchell, J. H., Philadelphia, Pa.**—Grindstone boxes. B 80. 515
- 195 Wharton, Wm., jr., Philadelphia, Pa.**—Rail-bending machine. D 72. 515
- 196 Seymour, Frederick J., Wolcottville, Conn.**—Machinery for spinning articles of hollow-ware from sheet metal. C 26. 515
- 197 Kennedy, DeLancy, New York, N. Y.**—Shearing, punching, gripping, and pressing tools and machinery; spiral punch and die. B 37. 515
- 198 Cummings, Geo. L., New York, N. Y.**—Grindstone frames. B 34. 515
- 199 Flather & Co., Nashua, N. H.**—Engine lathes, tapping machine. B 34. 515
- 200 Dariot, Constant, Philadelphia, Pa.**—Foot lathe, with slide rest, etc. C 34. 515
- 201 Celluloid Emery Wheel Co., Newark, N. J.**—Celluloid emery and corundum wheels. (Annex.) 515
- 202 Teal, C. A., & W. L., Philadelphia, Pa.**—Boiler rolls, punching and shearing machines, hair-picking machine. C 25. 515
- 203 Scofield, Charles, Vineland, N. J.**—Machine for straightening shafting in position. C 34. 515
- 204 Cox & Sons, Bridgeton, N. J.**—Steam and gas-fitters' tools, supplies, etc. C 32. 515
- 205 Hamlin, G. A., Philadelphia, Pa.**—Machinery for refitting valves. C 34. 515
- 206 Lehigh Valley Emery Wheel Co., Weissport, Pa.**—Emery wheels and fixtures. (Annex.) 515
- 207 Fitchburg Machine Co., Fitchburg, Mass.**—Lathes and Drills. C 38. 515
- 208 Ames Manufacturing Co., Chicopee, Mass.**—Engine lathes, planer, drills, edging machine, die-sinking machine. C 38 to 40. 515
- 209 Gray, J. Hammond, Philadelphia, Pa.**—Screw machinery, for turning and threading screws, etc. B 27. 515
- 210 Hillies & Jones, Wilmington, Del.**—Radial drills and slotting machine. B 37. 515
- 211 Hardy Machine Co., Biddeford, Maine.**—Emery wheel card-grinders, cloth-shear, and planer knife grinders. B 35. 515
- 212 Stacy Stone Dressing Machine Co., New York, N. Y.**—Stone-dressing machine. (Annex.) 516
- 213 Rogers, William A., Cambridge, Mass.**—Automatic machine for grinding surfaces on glass, etc. C 42. 516
- 214 Branch, Crookes, & Co., St. Louis, Mo.**—Diamond saws and mills for cutting stone. (*Saw mill.*) 516
- 215 Steam Stone Cutter Co., Rutland, Vt.**—Stone channeling or quarrying machines, block of machine-cut marble. (Annex.) 516
- 216 Emerson Stone Saw Co., Pittsburgh, Pa.**—Diamond circular stone saw. (Annex.) 516
- 217 Batley, John, & Co., Philadelphia, Pa.**—Shaping machine, for moulding, paneling, or carving on marble, etc. (Annex.) 516
- 218 Castle, Wm. W., Belfast, Maine.**—Stone-polishing machines, steel quarry square, machine for centering stone columns, bush hammers. (Annex.) 516
- 219 Ryan, Jas. M., Cincinnati, Ohio.**—Silver-plated lathe, show cases, and cut glass. D 38. 516
- 220 Ross, Thos., Rutland, Vt.**—Stone-sawing machine. (Annex.) 516
- 221 Young, Hugh, New York, N. Y.**—Reciprocating stone-sawing machines. (*Saw mill.*) 516
- 222 Union Stone Co., Boston, Mass.**—Emery wheels and machinery for grinding and polishing iron and steel. B 4, and annex. 515

MACHINERY.

Brick and Glass Machines, Machinists' Tools.

- 223 Carnell, F. L., & D. R., Philadelphia, Pa.**—Fire and pressed brick machines, model of brick machine. (*Annex.*) 517
- 224 Newkumet, Adam, Philadelphia, Pa.**—Crucible and pottery ware machines, drying apparatus for glass-house pots, retorts, etc. 517
- 225 Miller, Samuel P., & Son, Philadelphia, Pa.**—Hand brick press, model of clay-tempering machine, brickmakers' tools. (*Annex.*) 517
- 226 Carnell, Geo., Philadelphia, Pa.**—Brick press and pug mill. (*Annex.*) 517
- 227 Morand, Augustus, Philadelphia, Pa.**—Brick-making machine. (*Annex.*) 517
- 228 Garretson, I. H., Keokuk, Iowa.**—Brick-moulding machine, ring fence. (*Annex.*) 517
- 229 Excelsior Brick & Stone Co., Philadelphia, Pa.**—Model of brick machine, samples of brick and stone. (*Annex.*) 517
- 230 McLean & Bennor Brick Machine Co., Philadelphia, Pa.**—Impact brick machine, making brick with a blow. (*Annex.*) 517
- 231 Chambers, Bro., & Co., Philadelphia, Pa.**—Archimedean brick machine. D 23. 517
- 232 Hotchkiss, James, Springfield, Ohio.**—Brick machine. (*Outside of building.*) 517
- 233 Gregg, Isaac, Jr., & Co., Philadelphia, Pa.**—Steam brick machine, one-faced front brick. (*Annex.*) 517
- 234 Haslehurst, Samuel, St. Louis, Mo.**—Hand brick-moulds. (*Annex.*) 517
- 235 Turner, Parks, & Co., Cuyahoga Falls, N. Y.**—Balance valve, clay mill. E 58, and outside, near annex. 517
- 236 Gregg, Wm. L., Philadelphia, Pa.**—Triple pressure brick machines, ceramic gas-kiln. (*Annex.*) 517
- 237 Great American Brick Machine Co., Croton, N. Y.**—Brick machine and trucks. (*Annex.*) 517
- 238 Sharts, Theodore, New York, N.Y.**—Brick-kiln arch irons. D 10-80, and annex. 517
- 239 Williams, S., & Son, Philadelphia, Pa.**—Brick makers' implements. (*Annex.*) 517
- 240 Stockwell, J. W., Portland, Me.**—Cement pipe machinery, concrete mixing, sewer pipe tamper, moulds for drain pipe, samples of work. (*Annex.*) 517
- 241 Martin, Henry, Lancaster, Pa.**—Self-acting brick machine. (*Annex.*) 517
- 242 Lafer, J. A., Albion, New York.**—Brick-making machine in operation, brick mould, bricks, and model of brick machine. (*Annex.*) 517
- 243 Hamilton, S. M., Baltimore, Md.**—Perpetual brick kiln. (*Annex.*) 517
- 244 Mathieu, Charles, Colosse, N. Y.**—Glass-blowing steam-engine. E 74. 518
- 245 Burgess, Warren S., Norristown, Pa.**—Blow pipe, animal-clipping machine. E 74. 518
- 246 Holzer, William, Philadelphia, Pa.**—Process of manufacture of druggists', chemists', perfumers', philosophical and fancy glassware. B 32. 518
- 247 Brooke, Homer, New York, N. Y.**—Glass manufacturers' moulds and presses. E 75. 518
- 248 Chase, B. F., E. Stroudsburg, Pa.**—Glass-blowing machines. E 74. 518
- 249 Steele Brothers, Philadelphia, Pa.**—Glass engraver at work. E 75. 518
- 250 McCaffrey & Bro., Philadelphia, Pa.**—Hand-cut files and rasps. A 41. 519
- 251 Krumbhaar, Alexander, Philadelphia, Pa.**—Hand-cut files and rasps. A 43. 519
- 252 Barnett, G., & H., Philadelphia, Pa.**—Files and rasps. A 41. 519
- 253 Flagg, Stanley G., & Co., Philadelphia, Pa.**—Carriage hardware. A 41. 519
- 254 Hoopes & Townsend, Philadelphia, Pa.**—Bolts, cold-punched nuts, washers, chain links, wood screws, rivets. C 32. 519
- 255 Stephens Patent Vise Co., New York, N. Y.**—Parallel vises, with attachments, planer vise, with taper attachments. B 6. 519
- 256 Billings & Spencer Co., Hartford, Conn.**—Drop forgings, machinists' small tools. B 5. 519
- 257 Brainard Milling Machine Co., Boston, Mass.**—C 38-40.
- a* Milling machines, screw machine, mill grinding machines. 515
 - b* Steel bar vises. 519
- 258 Bedell, Otis T., New York, N. Y.**—Screw wrench. B 40. 519
- 259 Monk, Chas., Brooklyn, N. Y.**—Iron moulder's steel-finishing tools. B 40. 519
- 260 Silver and Deming Manufacturing Co., Salem, Ohio.**—Blacksmiths' post and table drills. F 54. 519
- 261 Morse Twist Drill and Machine Co., New Bedford, Mass.**—Drills, reamers, chucks, mills, gauges, taps, dies, screw plates, tap wrenches. B 40. 519
- 262 Plumb, Burdick, & Barnard, Buffalo, N. Y.**—Bolt-forging machines, with forge. (*Annex.*) 519
- 263 Clark Brothers & Co., Hillsdale, Conn.**—Bolts, rivets, nuts, washers, etc. B 6. 519
- 264 Parker, Chas., Meriden, Conn.—Vises.** B 6. 519
- 265 Fisher & Norris, Trenton, N. J.**—Double screw parallel vises, cast steel faced anvils. B 6, and annex. 519
- 266 Western File Co. (Limited), Beaver Falls, Pa.**—Machine-cut files. A 41. 519
- 267 Haase, John A., Philadelphia, Pa.**—Floor and door clamps, ratchet drills. B 41. 519
- 268 Simonds Manufacturing Co., Fitchburg, Mass.**—Knives and sickles for mowers and reapers, planing machine knives, circular saws. B 7 and 8, from pump annex west. 519
- 269 Rutschmann Bros., Philadelphia, Pa.**—Self-feeding hand drill. B 29. 519

Machinists' Tools, Silk, Woolen, Cotton Machines.

- 270 Beck, J. D., Liberty, Pa.**—Non-de-facing vises. B 40. 519
- 271 Russell, Burdsall, & Ward, Port Chester, N. Y.**—Bolts for manufacturers' use. A 40. 519
- 272 Clark Bros., Philadelphia, Pa.**—Eccentric or cam rivet pipe tongs. B 40. 519
- 273 Pool, A. Alex., & Co., Newark, N. J.**—Steel arbors for machinists and jewelers. D 40. 519
- 274 Wood, Geo. W., Philadelphia, Pa.**—Self-adjusting flooring clamp and lifting jack. A 41. 519
- 275 Orum, Morris L., Philadelphia, Pa.**—Flexible mandrels for bending metal pipe. B 40. 519
- 276 Eaton, Cole, & Burnham Co., New York, N. Y.**—Brass and iron goods for plumbers, tools, vises; cast iron radiators. B 6. 519
- 277 Shaw, Thomas, Philadelphia, Pa.**—Lathe tools. D 69. 519
- 278 Nicholson File Co., Providence, R. I.**—Files finished, ground, and forged; file steel. A 42. 519
- 279 American File Co., Pawtucket, R. I.**—Files, file-testing machine. B 39. 519
- 280 Hey, Henry T., Philadelphia, Pa.**—Measuring gauge. A 41. 519
- 281 Spiral Tubing Co., Boston, Mass.**—Machine for making spiral seam pipe. B 34. 519
- 282 Hewitt & Follensbee, Washington, D. C.**—Machines for filing and setting saws. A 29. 515
- 283 Wilkinson, A. J., & Co., Boston, Mass.**—Foot-power lathe, bench lathes, small-power planer, hand-planer. C 38-40. 519
- 284 Wyman, J. Dana, Boston, Mass.**—Self-heating soldering iron. B 49. 519
- 285 Backus, Q. S., Winchendon, Mass.**—Bit braces, ratchet braces, tack hammers, etc. A 40. 519
- 286 Johnson, Wm., Lambertville, N. J.**—Universal lathe chuck. C 77. 519
- Machines and Implements of Spinning, Weaving, Felting, and Paper Making.**
- 287 Cutter, John D., & Co., New York, N. Y.**—Jacquard silk loom in operation; mechanism for measuring silk while spooling it. B 30. 520
- 288 Knowles & Bro., Worcester, Mass.**—D 51.
a Looms for silk dress goods, ribbons, webbings, etc. 520
b Looms for plain and fancy woolen goods. 522
- 289 Bacon, Leonard H., Hartford, Conn.**—Needle loom for weaving silk dress goods. D 31. 520
- 290 Wrigley, John, Paterson, N. J.**—Jacquard loom, changeable for power or hand. D 28. 520
- 291 Danforth Locomotive and Machine Co., Paterson, N. J.**—Silk machinery. D 28 and 41. 520
- 292 Nonotuck Silk Co., Florence, Mass.**—Machinery for throwing and finishing organzine, sewing silk, twist, and embroidery; machine for printing spools. D 41. 520
- 293 Holland Manufacturing Co., Willimantic, Conn.**—Machines for winding, measuring, and testing the strength of sewing silk and other threads. D 34. 520
- 294 Mitchell, J. M., Philadelphia, Pa.**—Cotton and woolen manufacturers' supplies, belting, hose, reeds, machinery, etc. C 51. 521
- 295 Avery, John G., Worcester, Mass.**—Thread, twine, and cord machinery. D 54. 521
- 296 New York Mills, Oneida Co., N. Y.**—Machinery, weaving cotton sheetings. C 46. 521
- 297 Planet Mills Manufacturing Co., Brooklyn, N. Y.**—Canvas-weaving power loom. C 46. 521
- 298 Butterworth, H. W., & Sons, Philadelphia, Pa.**—Drying machines for muslins, prints, tickings, etc.; dyeing machines for cotton warps. D 44 to 48. 521
- 299 Willimantic Linen Co., Hartford, Conn.**—Spool cotton thread-winding and ticketing machines. C 51. 521
- 300 Clark Thread Co., Newark, N. J.**—Self-acting spool-winding machine; show case. C 33 and A 34. 521
- 301 Dutcher Temple Co., Hopedale, Mass.**—Power loom temples. C 37. 521
- 302 Kitson Machine Co., Lowell, Mass.**—C 34.
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b Shoddy pickers and rag dusters. 521
c Needle-pointed wood and leather card clothing. 521
- 303 Prouty, A. B., Worcester, Mass.**—Card-setting machine. C 32. 521
- 304 Carroll, William, Worcester, Mass.**—Ring-spinning machine. C 50. 521
- 305 Gibbs Loom Harness and Reed Co., Clinton, Mass.**—Loom harness and reeds used for weaving. C 50. 521
- 306 Rockville Traverse Card Grinding Co., Rockville, Conn.**—Traverse grinder for woolen and cotton cards and shears. C 50. 521
- 307 Poole, J. Morton, & Co., Wilmington, Del.**—C 60.
a Glazing cylinder for finishing cotton goods. 521
b Chilled roll callenders, for paper-makers' use, ground chilled roll. 525
- 308 Hope & Co., Providence, R. I.**—Pantograph engraving machine for calico printers' plates. C 41. 521
- 309 Ingersoll & Balston, Greenpoint, N. Y.**—Hand-power hay and cotton press. C 55. 521
- 310 Butler, Brown, & Co., Providence, R. I.**—Ring travelers and belt hooks. C 34. 521
- 311 Ross, L. E., Providence, R. I.**—Spring shuttle motion for looms, independent of speed; loom with motion attached. C 36. 521
- 312 Palmer European Patent Tentering and Finishing Machine Co., Norwich, Conn.**—Machinery for stretching, tensing, and drying woven fabrics, lace, etc. C 56. 521

MACHINERY.

Woolen, Cotton, Paper, Sewing Machines.

- 313 Providence Machine Co., Providence, R. I.**—Spinning machinery, card and spinning frame built by Samuel Slater in 1796. D 36. 521
- 314 Hill, James, Providence, R. I.**—Tin filling box, tin cotton can. D 35. 521
- 315 Wood, Thomas, Philadelphia, Pa.**—Four-power looms, bobbin-winder, pulleys and hangers for cotton machinery. C 54. 521
- 316 Eaton & Ayer, Nashua, N. H.**—Bobbins, spools, shuttles, skeivers, etc., for spinning and weaving textiles. C 68. 521
- 317 Leonard & Silliman, Bridgeport, Conn.**—Mill spindle with driver, step, and points. E 56. 521
- 318 Shaw, George W., St. Louis, Mo.**—Continuous wool spinner. D 53. 521
- 319 Foss & Pevey, Lowell, Mass.**—Under flat cotton card. C 38. 521
- 320 Cleveland Machine Works, Worcester, Mass.**—Double-acting gig. D 47. 521
- 321 Howard, George C., Philadelphia, Pa.**—Winding and measuring machine, testing and shearing machine. B 31. 522
- 322 Avery, John G., Worcester, Mass.**—Continuous wool spinner. D 53. 522
- 323 Lyall, J., & W., New York, N. Y.**—Positive motion looms, weaving various fabrics. C 46 and 49. 522
- 324 Smith, James, & Co., Philadelphia, Pa.**—Machinery for manufacturing fabrics; manufacturers' supplies. D 62. 522
- 325 Furbush, M. A., & Son, Philadelphia, Pa.**—Carding machines, self-acting spinning mule. D 52. 522
- 326 New England Co., Rockville, Conn.**—Spooler, warp dresser, reel, beamer. D 46. 522
- 327 Thames River Worsted Co., Norwich, Conn.**—Spinning frame with ring and transverse bar. D 48. 522
- 328 Parks & Woolson Machine Co., Springfield, Vt.**—Cloth-shearing machine, cloth-brushing machine, etc. D 41. 522
- 329 Furbush, M. A., & Son, Philadelphia, Pa.**—Ingrain carpet power loom. D 52. 522
- 330 Short, James, New Brunswick, N. J.**—Positive motion loom for carpeting. D 47. 522
- 331 Crabb, William, Newark, N. J.**—Hackles, wood and leather card clothing, wool combs, picker teeth, comb pins. C 63. 522
- 332 Butterworth, James, & Son, Philadelphia, Pa.**—Rag, waste, and shoddy picker. D 58. 522
- 333 Dornan Bros. & Co., Philadelphia, Pa.**—Shading carpet power loom without shuttles. D 46. 522
- 334 Silcott, Millikan, & Gold, Washington C. H., Ohio.**—Cloth-measuring and rolling machine. D 52. 522
- 335 McCausland, John, Providence, R. I.**—Paper cop for woolen spinning. P 49. 522
- 336 Hillman, Lewis, Philadelphia, Pa.**—Automatic measuring machine. D 43. 522
- 337 Draper, George, & Son, Hopedale, Mass.**—Spinning frame, spooler, wiper, and creel; twister, spinning rings. C 51. 522
- 338 Whitney, Baxter D., Winchendon, Mass.**—Wool-spinning machine. D 53. 522
- 339 Turner, Isaac, & Co., Boston, Mass.**—Rotary knife cloth-cutting machine. C 73. 522
- 340 Rice, Barton, and Fales Machine and Iron Co., Worcester, Mass.**—Drying and tentering machine, hydro-extractor. D 42. 522
- 341 Crabb, William, Newark, N. J.**—Rope-makers' pins, gills. C 63. 524
- 342 Kuh, Sol., Grand Junction, Iowa.**—Straw-twister, matting-weaver, etc. C 63. 524
- 343 Gavit Machine Works, Philadelphia, Pa.**—Paper-making machine and adjuncts. F 65-73. 525
- 344 Lobdell Car Wheel Co., Wilmington, Del.**—Chilled-iron callender rolls for paper. E 65. 525
- 345 Holyoke Machine Co., Holyoke, Mass.**—Web callender; beating-rag engine. F 74. 525
- 346 Entrekin, William G., Philadelphia, Pa.**—Enamelor for burnishing photographs, paper, etc. C 41. 525
- 347 Ross, E. W., & Co., Fulton, N. Y.**—Paper mill. F 64, and outside. 525
- Machines, Apparatus, and Implements used in Sewing and making Cloth-ing and Ornamental Objects.**
- 348 Butler Braider Co., Clinton, Mass.**—Braiding machinery. C 42. 530
- 349 Wimpfheimer, Mrs. C., Philadelphia, Pa.**—Loom for manufacture of hair-ribbon. C 42. 530
- 350 Marin, Charles, New York, N. Y.**—Embroidery machine. C 43. 530
- 351 Oppenheimer, J. D., Philadelphia, Pa.**—Process for curling hair by steam or hot water. C 43. 530
- 352 Howard, George C., Philadelphia, Pa.**—Forming-presses for buckram, felt, leather, etc. D 31. 531
- 353 American Buttonhole, Overseam-ing, and Sewing Machine Co., Philadel-phia, Pa.**—Sewing machines. C 61. 531
- 354 Franz & Pope Knitting Machine Co., Cuyrus, Ohio.**—Automatic knitting machines, seamless hosiery knitting ma-chines; samples of work. C 64. 531
- 355 Wheeler & Wilson Manufacturing Co., Bridgeport, Conn.**—Sewing machines and attachments; samples of work. C 44. 531
- 356 Washburn Machine Shop, Worcester, Mass.**—American drawing models, adjustable drawing tables. C 38. 531
- 357 Wensley, James, Philadelphia, Pa.**—Improvement in buttonhole sewing ma-chines. C 46. 531
- 358 Lamb Knitting Machine Manufac-turing Co., Chicopee Falls, Mass.**—C 64.
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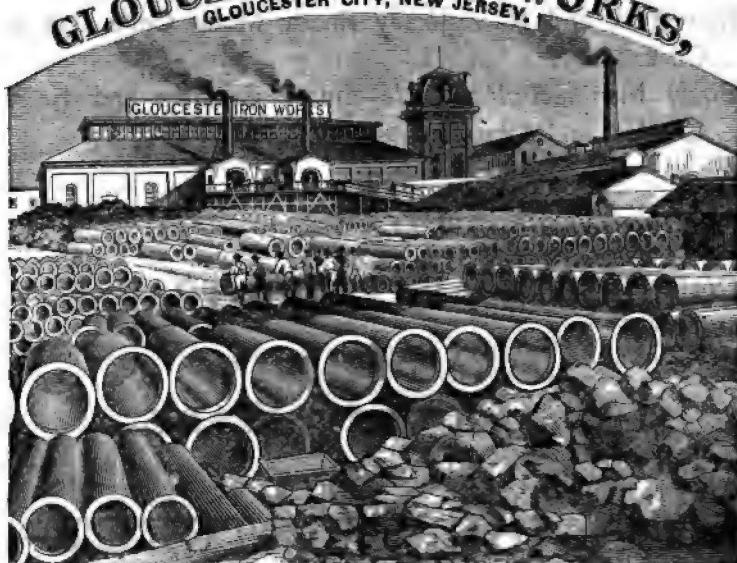
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Sewing, and Clothing-making Machines.

- 359 Howe Machine Co., Bridgeport, Conn.**—Sewing machines. C 52. 53¹
- 360 Rex & Bockius, Philadelphia, Pa.**—Sewing machine. C 69. 53¹
- 361 Bartlett, Joseph W., New York, N. Y.**—Reversible sewing machines. C 45. 53¹
- 362 Wilson Sewing Machine Co., Chicago, Ill.**—Sewing machines. C 47. 53¹
- 363 Billings & Spencer Co., Hartford, Conn.**—Sewing machine shuttles. B 5. 53¹
- 364 Wilcox & Gibbs Sewing Machine Co., New York, N. Y.**—Sewing machines with automatic tension, etc. C 50. 53¹
- 365 Warth, Albin, Stapleton, N. Y.**—Cutting machines for clothing, notching implement for patterns, folding machine. C 70. 53¹
- 366 United States Corset Co., New York, N. Y.**—Corset-weaving power loom. C 46. 53¹
- 367 DuLaney, G. L., & Co., New York, N. Y.**—Sewing machine. C 55; B 29. 53¹
- 368 Florence Sewing Machine Co., Florence, Mass.**—Sewing machines. C 51. 53¹
- 369 Davis Sewing Machine Co., Watertown, N. Y.**—Sewing machines. C 51. 53¹
- 370 National Suspender Co., New York, N. Y.**—Loom for manufacturing suspenders. C 69. 53¹
- 371 St. John Sewing Machine Co., Springfield, Ohio.**—Sewing machines. C 54. 53¹
- 372 Beckwith Sewing Machine Co., New York, N. Y.**—Sewing machines. C 55. 53¹
- 373 McLean & Bennor Machine Co., Philadelphia, Pa.**—Sewing machines. C 60. 53¹
- 374 Johnson, Clark, & Co., Boston, Mass.**—Sewing machines. C 59. 53¹
- 375 Campbell & Clute, Cohoes, N. Y.**—Double table knitting machine, yarn winder, turning-off machine. C 64. 53¹
- 376 Hart Wm. H., Jr., Philadelphia, Pa.**—Holding, delivering, and feeding machine. C 65. 53¹
- 377 Yule, George, Newark, N. J.**—Wool forming machine, sizing, stiffening, body stretching, etc., for hatters' use. C 67. 53¹
- 378 Victor Sewing Machine Co., Middletown, Conn.**—Sewing machines, adjustable drill chuck, compensating journal. C 58. 53¹
- 379 Wagener, Jeptha, Holtsville, N. Y.**—Sewing machines, carriages, and attachments. C 62. 53¹
- 380 Whitney Manufacturing Co., Paterson, N. J.**—Sewing machines. C 58. 53¹
- 381 Singer Manufacturing Co., Elizabethtown, N. J.**—Sewing machines, samples of work, and case of machine twist. (*Special building.*) 53¹
- 382 Home Knitter Co., Alliance, Ohio.**—One-needle knitter for stockings. C 64. 53¹
- 383 Universal Thread Co., Newark, N. J.**—Fulling machine for hat manufacturing, etc. C 56. 53¹
- 384 New York Needle Co., Jersey City, N. J.**—Needles, shuttles, and sewing machine attachments. C 66. 53¹
- 385 Shutt, Daniel, New York, N. Y.**—Machine-needle threaders. F 33. 53¹
- 386 Lathrop Anti-frictionate Co., New York, N. Y.**—Anti-frictionate sewing machine. D 68. 53¹
- 387 Dyson Needle Co., New Britain, Conn.**—Spring-needles and points for knitting machines. C 63. 53¹
- 388 Humphrey Bros., Boston, Mass.**—Single-thread button-hole machine, with automatic feed. C 52. 53¹
- 389 Thomas, W. S., Laconia, N. H.**—Knitting machines. C 61. 53¹
- 390 Hinkley, Jonas, Norwalk, Ohio.**—Carpet and floor sweeper, knitting machines. C 62. 53¹
- 391 Rardon, James S., Cincinnati, Ohio.**—Buttonholer, for sewing machines. C 56. 53¹
- 392 Pearson, William, Philadelphia, Pa.**—Hosiery-seaming machine. C 62. 53¹
- 393 Taft, J. C., Providence, R. I.**—Sewing machines. C 7. 53¹
- 394 Hull & Belden Co., Danbury, Conn.**—Machine for forming fur hats. C 72, and annex. 53¹
- 395 Domestic Sewing Machine Co., New York, N. Y.**—Sewing machines. C 57. 53¹
- 396 Bickford, Dana, New York, N. Y.**—Automatic knitting machines. C 73. 53¹
- 397 Shaw, Mrs. Elizabeth F., Brooklyn, N. Y.**—Dress-protector for sewing machines. C 59. 53¹
- 398 Armour Knitting Machine Co., Watertown, N. Y.**—Family knitting machine. C 53. 53¹
- 399 Wardwell Manufacturing Co., St. Louis, Mo.**—Family sewing machine. C 63. 53¹
- 400 National Hat-Pouncing Machine Co., New York, N. Y.**—Machinery to shear the surface of fur and wool hats. C 70. 53¹
- 401 Eickmeyer Hat-Blocking Machine Co., New York, N. Y.**—Machinery to stretch, block, iron, and sew sweats into fur and wool hats. C 70. 53¹
- 402 Cuming, M. A., New York, N. Y.**—Hand-power hydraulic hat press. C 62. 53¹
- 403 Fish, Warren L., Newark, N. J.**—Sewing machines. C 46. 53¹
- 404 Mosser, Wm. F., & Co., Allentown, Pa.**—Bark mill, with independent grinding segments. A 48, and pump annex. 53²
- 405 Oakley & Keating, New York, N. Y.**—Washing machine. E 80. 53¹
- 406 Buck, Isaiah D., Conshohocken, Pa.**—Suction washing machine. E 76. 53⁴
- 407 Woods, George, & Co., Cambridgeport, Mass.**—Drying process. E 78. 53⁴
- 408 Lewis, Rufus S., New Hampton, N. H.**—Ironer and polisher for laundry use. E 77. 53⁴
- 409 Sternberger, Leopold, Philadelphia, Pa.**—Steam starching, ironing, and polishing machines for laundries. (Pump annex.) 53⁴

Clothing, Jewelers', and Printers' Machines.

- 410 Calkins Champion Washer Co., Chicago, Ill.—Washing machine.** E 76. 534
- 411 York Manufacturing Co., York, Pa.—Washing machine.** D 78. 534
- 412 Bing, James, Philadelphia, Pa.—Mangle.** E 77. 534
- 413 Walker, W. B., Boston, Mass.—Machine for pressing garments; smoothing-iron and sad-irons.** E 79. 534
- 414 Briggs, Nicholas A., Shaker Village, N. H.—Shaker washing machine.** E 79. 534
- 415 Burt & Putnam, Rockville, Conn.—Washer for scouring cloth.** E 78. 534
- 416 Felder, Charles, New York, N. Y.—Plaiting, pinking, fluting, and crimping machines.** C 62. 534
- 417 Storrs, Levi B., Canton, N. Y.—Pressing machines for tailors' use.** E 79. 534
- 418 American Watch Co., Waltham, Mass.—Machinery used in watch-making.** C 41. 535
- 419 Chormann, E. G., Philadelphia, Pa.—Engraving machine, with slide rest and attachments.** D 38. 535
- 420 Stilwell & Pierce, Newark, N. J.—Jewelers' lathes, foot-press for rolling-mill, gold ingot.** D 80. 536
- 421 National Needle Co., Springfield, Mass.—Machine for making hand and sewing-machine needles.** C 40. 537
- 422 Pyramid Pin Co., New Haven, Conn.—Machine for sticking pins in paper.** C 42. 537
- 423 Huston, R. W., Brooklyn, N. Y.—Spiral safety pins, and automatic machines for manufacturing the same.** C 43. 537
- Machinery and Apparatus for Type Setting, Printing, Stamping, Embossing, and for Making Books, and Paper Working.**
- 424 Howard, George C., Philadelphia, Pa.—Plate press, screw, printing and embossing press.** B 31. 540
- 425 Kelsey, W. A., & Co., Meriden, Conn.—Portable printing presses.** F 32. 540
- 426 Hickok, W. O., Harrisburg, Pa.—Paper-ruling machines, head-striking machine, book-binders' standing press, and board cutter.** F 34. 540
- 427 Gordon, George P., New York, N. Y.—Printing presses.** F 34-36. 540
- 428 Potter, C., Jr., & Co., New York, N. Y.—Book, job, and newspaper printing presses.** F 25. 540
- 429 Rex & Bockius, Philadelphia, Pa.—Printing presses.** C 69. 540
- 430 Renick, B. F., & Co., Canton, Ohio.—Printing press.** F 30. 540
- 431 Lent, A. E., Philadelphia, Pa.—Press for printing steel and copper plates.** E 28. 540
- 432 Degener & Weiler, New York, N. Y.—Printing machines.** F 20. 540
- 433 Golding & Co., Boston, Mass.—Printing presses, printers' tools.** E 30. 540
- 434 Rosenthal, Isador, New York, N. Y.—Apparatus for stamping patterns of ladies' garments.** E 32. 540
- 435 Hammett, L. C., Philadelphia, Pa.—Printers' rollers and composition.** E 40. 540
- 436 Linfoot, Benjamin, Philadelphia, Pa.—Litho and zincographic printing machine, crank bed, self-adjusting scraper, and tympan pressure, bed feed.** E 29. 540
- 437 Bagger, Louis, Washington, D. C.—Printing press using compound lithographic stones.** E 31. 540
- 438 Haughwout, E. V., New York, N. Y.—Two printing presses.** E 31. 540
- 439 Bullock Printing Press Co., Philadelphia, Pa.—Printing presses and stereotyping machinery.** E 25. 540
- 440 Cottrell & Babcock, New York, N. Y.—Stop-cylinder press, roller-drum cylinder press, perfecting press for illustrated cut work.** F 26. 540
- 441 Child, C. C., Boston, Mass.—Printing presses.** F 32. 540
- 442 Daughaday, J. W., & Co., Philadelphia, Pa.—Printing press, self-feeding attachment.** E 31. 540
- 443 Woods, B. O., & Co., Boston, Mass.—Amateur printing presses, improved type cases.** E 30. 540
- 444 Dickson, John, & Co., Philadelphia, Pa.—Engraving on vulcanized rubber for printing on letter-press.** E 32. 540
- 445 Ferre, Samuel P., Philadelphia, Pa.—Chromotype cylinder printing press, prints five colors at once.** E 32. 540
- 446 Cook, William, Daretown, N. J.—Automatic paper feeder for printing presses and ruling machines.** E 31. 540
- 447 Shutt, Daniel, New York, N. Y.—Printing press.** F 33. 540
- 448 Shutt, D., New York, N. Y.—Machine for making needle-threaders for sewing machines.** F 33. 540
- 449 Safford, Geo. W., & Co., Boston, Mass.—Printing presses.** F 19. 540
- 450 Shiland, Alex., West Troy, N. Y.—Typographic and stereotyping machine and copying press.** E 30. 540
- 451 Parks, John A., New York, N. Y.—Hand and scraper pattern power lithographic printing presses.** F 28. 540
- 452 Boston and Fairhaven Iron Works, Fairhaven, Mass.—Newspaper and job printing press.** F 29. 540
- 453 Bencke & Scott, New York, N. Y.—Process of manufacturing chromo picture entitled, "One Hundred Years Ago."** F 19. 540
- 454 Howell & Brothers, Philadelphia, Pa.—Wall paper printing machine, cutting off and rolling machine, hanging up and hardening machines.** F 55-80. 540
- 455 Gorham, W. B., & Co., Boston, Mass.—Rotary, lever, and treadle presses.** E 26. 540
- 456 Mann, Wm. H., Philadelphia, Pa.—Steam paging and numbering machine.** E 32. 540
- 457 Newbury, A., & B., Coxsackie, N. Y.—Printing press.** F 33. 540

UNITED STATES.

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Printing and Paper-working Machines, Engines.

- 458** **Globe Manufacturing Co., Palmyra, N. Y.**—E 28.
 a Printing presses. 540
 b Paper cutters. 546
- 459** **Mackellar, Smiths, & Jordan, Philadelphia, Pa.**—Type founding machinery for casting and finishing types, types and printing materials. E 5. 541
- 460** **Grant, Geo. B., Boston, Mass.**—Calculating machines. E 44. 542
- 461** **Daul, A., Newark, N. J.**—Writing and matrix machines. E 5. 542
- 462** **Bain, John W., Philadelphia, Pa.**—Type writer. E 5. 542
- 463** **Pratt, John, Centre, Ala.**—Type writing machine. E 40. 542
- 464** **Standard Laundry Machinery Co., Boston, Mass.**—E 77.
 a Washing, wringing, and starching machines. 534.
 b Telegraph copying machine. 542
- 465** **Page, Wm. H., & Co., Greeneville, Conn.**—Wood type, specimen books of wood type. E 5. 542
- 466** **Bruce's Son, Geo., & Co., New York, N. Y.**—Book of printing types, and cases of samples of printing types. E 5. 542
- 467** **Hoffman & Hoyt, New York, N. Y.**—Copying presses. E 5. 542
- 468** **Corey & Harper, Philadelphia, Pa.**—Justifying type-setting machine. E 45. 542
- 469** **Brainard, Charles R., Boston, Mass.**—“Bank” and copy distributor for printing office. E 40. 542
- 470** **Boomer & Boschert Press Co., Syracuse, N. Y.**—Copying press, paper presses, glue press, leather-binding press, cloth-balancing press. E 39. 544
- 471** **Shive Governor Co., Bethlehem, Pa.**—Portable bookbinder. D 69. 544
- 472** **Automatic Book-Sewing Machine Co., Milford, Conn.**—Book-sewing, pamphlet wire-stitching, and magnetic fastening machines. F 33. 544
- 473** **Standard Machinery Co., Mystic River, Conn.**—Steam rounding and back-ing machine, automatic book trimmer, and power paper cutter. E 40. 544
- 474** **Seimle, Mary H., Lowell, Mass.**—Steam cutter for bookbinders' use. F 33. 544
- 475** **Wm. F. Murphy's Sons, Philadelphia, Pa.**—F 34-36.
 a Blank-book manufactory and printing office. 544
 b Paper-cutting machine. 546
- 476** **Francis & Loutrel, New York, N. Y.**—Folding machine for blank-book makers and paper mills. F 34-36. 545
- 477** **Forsaith, S. C., & Co., Manchester, N. H.**—Newspaper folding machine. E 39, and annex. 545
- 478** **Chambers, Bro., & Co., Philadelphia, Pa.**—Newspaper folder, pastier, and trimmer; book-folder; periodical folder, pastier, and coverer. D 23. 545
- 479** **Molyneaux, J. B., Cleveland, Ohio.**—Newspaper folding machine. E 32. 545
- 480** **Jaeger, Gustav L., New York, N. Y.**—Paper-lining machine. D 24. 546
- 481** **Brown & Carver, Philadelphia, Pa.**—Card and paper cutters. E 26. 546
- 482** **Beck, Charles, Philadelphia, Pa.**—Machinery for making paper boxes and cutting paper. D 25. 546
- 483** **Child, C. C., Boston, Mass.**—Paper cutter. F 32. 546
- 484** **Cleveland Paper Box Machine Co., Cleveland, Ohio.**—Machine for making paper boxes, cutting press, nicking ma-chine for blanks. D 25. 546
- 485** **Riehl, M., & Sons, Philadelphia, Pa.**—Self-clamping book-cutting machine and paper-cutting machine. D 25. 546
- 486** **Kerr, Norman M., & Co., Philadel-phia, Pa.**—Manufacture of paper boxes. D 25. 546
- 487** **Novelty Paper Box Co., Philadel-phia, Pa.**—Book stitching and sewing ma-chines. D 23. 546
- 488** **Curtis & Mitchell, Boston, Mass.**—Paper cutters, self-inking printing presses, card cutters, etc. D 24. 546
- 489** **Sheridan, E. R., & T. W., New York, N. Y.**—Paper cutters, book trim-mer, shears, presses, sawing machine, etc. D 25. 546
- 490** **Packer, Charles W., Philadelphia, Pa.**—Machines for cutting card board. D 25. 546
- 491** **Vanhorn & Cranston, Brooklyn, N. Y.**—Paper-cutting machines. E 26. 546
- 492** **Lockwood, W. E., & E. D., Philadel-phia, Pa.**—Automatic envelope and paper collar machines. D 27. 547
- 493** **Hoole, John R., New York, N. Y.**—Perforating machine for checks, stamps, tickets, etc.; paging machine, for number-ing books, tickets, etc. F 34 to 36. 547
- 494** **Cohen, Chas. J., Philadelphia, Pa.**—Machine for folding, gumming, and finishing self-sealing envelopes. D 26. 547
- Motors and Apparatus for the Genera-tion and Transmission of Power.**
- 495** **Williamson Brothers, Philadel-phia, Pa.**—Portable and stationary hoist-ing engines, with spur and frictional gear-ing. D 79, and boiler house. 550
- 496** **Tupper, Lorenzo B., New York, N. Y.**—Furnace grate bars. D 76. 550
- 497** **Connery, James W., Philadelphia, Pa.**—Concave calking for steam boilers, iron ships, and metallic vessels. D 76. 550
- 498** **Tupper, W. W., & Co., New York, N. Y.**—Grates for steam boiler furnaces, etc. D 78. 550
- 499** **Frick & Co., Waynesborough, Pa.**—Portable farm and stationary engines. D 75, and boiler house. 550
- 500** **Bigelow, H. B., & Co., New Haven, Conn.**—Combined and independent en-gines and boilers. D 71. 550
- 501** **Steam Generator Manufacturing Co. of Pennsylvania, Philadelphia, Pa.**—Sectional boiler. (Boiler house.) 550
- 502** **American Engine Co., Jersey City, N. J.**—Engines and thresher locomotive. D 75. 550
- 503** **Shaw, Thomas, Philadelphia, Pa.**—Steam and vacuum gauges, test pump, air chamber feeder, hydraulic valves and gauges. D 69. 550

MACHINERY.

Boilers, Engines, Water-Wheels.

- 504 Reed, John A., New York, N. Y.**—Tapering corrugated sectional boilers. D 77. 550
- 505 Steigert, Leopold, Cincinnati, Ohio.**—Meat-chopping machines, with engine attachments, horizontal engine. D 78. — 550
- 506 Bent, Samuel S., New York, N. Y.**—Shaking grate bars for steam boilers, etc. E 75. 550
- 507 Harrison Boiler Works, Philadelphia, Pa.**—Sectional safety steam boiler. D 77, and boiler house. 550
- 508 Babcock & Wilcox, New York, N. Y.**—Sectional safety steam boiler. (*Boiler house.*) 550
- 509 Meissner, Julius H., Philadelphia, Pa.**—Shelving grates and furnaces. E 76. 550
- 510 Shore Bros., Philadelphia, Pa.**—Boiler feed, belt pumps, steam pump. E 75. 550
- 511 Houghton, R. J., New York, N. Y.**—Boiler and tube compound for removing and preventing scale; specimens of scale. E 76. 550
- 512 Snyder, Ward B., New York, N. Y.**—Steam engine. B 71. 550
- 513 Howard Safety Boiler Manufacturing Co., Boston, Mass.**—Safety sectional wrought-iron nine-inch tube boiler. (*Boiler house.*) 550
- 514 Ames Iron Works, Oswego, N. Y.**—Portable steam engines. B 73, and boiler house. 550
- 515 Rawson & Hittinger, Cambridgeport, Mass.**—Portable hoisting and horizontal engines. B 73, and boiler house. 550
- 516 Erie City Iron Works, Erie, Pa.**—Horizontal tubular boiler, portable engines, farm engine with vertical boiler and horizontal engine. C 76. 550
- 517 Ryder Reciprocal Grate Association, Taunton, Mass.**—Reciprocal grates. D 68. 550
- 518 Lowe & Watson, Bridgeport, Conn.**—Steam boiler. (*Boiler house.*) 550
- 519 Chalmers Spence Co., Philadelphia, Pa.**—Composition boiler and steam pipe covering; tube cleaner. D 78. 550
- 520 Shuster, John T., Philadelphia, Pa.**—Boiler and pipe covering. D 78. 550
- 521 Murrill & Keizer, Baltimore, Md.**—Automatic damper regulator for steam boilers. D 64. 550
- 522 Baird & Huston, Philadelphia, Pa.**—Horizontal tubular boiler. D 38 to 40. 550
- 523 Exeter Machine Works, Boston, Mass.**—Sectional independent expansion and contraction boiler. (*Pump annex.*) 550
- 524 Hadley Co., J. C., Lawrence, Mass.**—Portable steam engines. D 80. 550
- 525 Kelley, Wm. E., New Brunswick, N. J.**—Sectional safety boiler. (*Pump annex, and boiler house.*) 550
- 526 Lovegrove & Co., Philadelphia, Pa.**—Vertical tubular boilers. B 75, and boiler house. 550
- 527 Armstrong Heater Manufacturing Co., Toledo, Ohio.**—Improved heater, lime extractor, condenser, adjustable feed pump for steam boilers. D 74. 550
- 528 Guynan, R. B., Philadelphia, Pa.**—Log, circulating, and pneumatic beer boilers. D 74. 550
- 529 Ellis, Charles R., New York, N. Y.**—Hot-water apparatus for heating buildings. D 75. 550
- 530 Haskins Steam Engine Co., Fitchburg, Mass.**—Interchangeably-made engines. C 74, and boiler house. 550
- 531 Kreider, Campbell, & Co., Philadelphia, Pa.**—Horizontal steam engine. E 50. 550
- 532 American Road Steamer Co., Philadelphia, Pa.**—Road Steamer. E 80. 550
- 533 Hartford Steam Boiler Inspection and Insurance Co., Hartford, Conn.**—Incrustation, scale, and defective iron from steam boilers, fragments of exploded boilers. D 76. 550
- 534 Colt's Patent Fire Arms Manufacturing Co., Hartford, Conn.**—Steam engines, steam cylinder in boiler, interchangeable parts. D 74, and boiler house. 550
- 535 Sample, McElroy, & Co., Keokuk, Iowa.**—Semi-portable steam engine and boiler. D 77. 550
- 536 Payne, B. W., & Sons, Corning, N. Y.**—Vertical engines with safety boilers. (*Boiler house.*) 550
- 537 Andrus & Wallace, Keokuk, Iowa.**—Feed water purifier for steam boilers, etc. (*Pump annex.*) 550
- 538 Vail, S. S., Keokuk, Iowa.**—Reversible steam boiler, boiler for cooking, in vacuum or open, with cleaner. D 77. 550
- 539 Lynde, J. D., Philadelphia, Pa.**—Safety boiler. B 71, and boiler house. 550
- 540 Sharps, Theodore, New York, N. Y.**—Furnace-grate bars. (*Annex.*) 550
- 541 Smith, Charles D., Boston, Mass.**—Water gauge for steam boilers. C, and boiler house. 550
- 542 Gillis & Geoghegan, New York, N. Y.**—Boiler feeder and steam trap. (*Boiler house.*) 550
- 543 Harrold, George W., Rochester, N. Y.**—Automatic steam trap. D 64. 550
- 544 Johns, H. W., New York, N. Y.**—
a Asbestos roofing, asbestos cement felt-
ing, lined hair felt. 228
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- 545 Skinner & Wood, Erie, Pa.**—C 78.
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b Portable engine. 552
- 546 Sellers, William, & Co., Philadelphia, Pa.**—C 18-25, and annex.
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b Three cylinder engines. 552
c Shafting, hangers, couplings. 553
- 547 Haworth, James, Philadelphia, Pa.**—Turbines, driven by hydrant-water power. D 73. 551
- 548 Lane Manufacturing Co., Montpelier, Vt.**—Monitor turbine water-wheel. A 35-37. 552
- 549 Grier, W. W., Hulton, Pa.**—Hydraulic ram sentinel. D 79. 553
- 550 Stout, Mills, & Temple, Dayton, Ohio.**—Turbine water-wheels with and without flumes. D 80. 553

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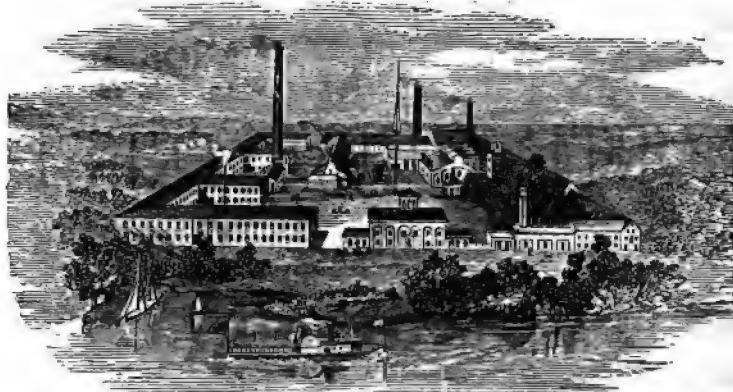
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Water-Wheels, Engines.

- 551** Stilwell & Bierce Manufacturing Co., Dayton, Ohio.—Double turbine water-wheel. D 8o. 551
- 552** Dexter Spring Co., Hulton, Pa.—Carriage spring, in connection with fifth wheel. D 79. 551
- 553** Leffel, James, & Co., Springfield, Ohio.—Double turbine water-wheel. D 77. 551
- 554** Chase Turbine Manufacturing Co., Orange, Mass.—Turbine wheels. (*Pump annex.*) 551
- 555** Wolf, Abraham N., Allentown, Pa.—Turbine water-wheel and flume. (*Pump annex.*) 551
- 556** Buzby, Albert G., Philadelphia, Pa.—Water-motor from hydrant pressure; model of centripetal railway. D 79. 551
- 557** Bodine Manufacturing Co., Mt. Morris, N. Y.—Brass turbine water-wheel. D 79. 551
- 558** Valentine, Wm. J., Fort Edward, N. Y.—Turbines, with and without register gates; hydraulic motor. D 79. 551
- 559** Wright & Rogers, Minneapolis, Minn.—Stationary, portable, locomotive, and marine steam engines. D 79. 551
- 560** Mosser, Wm. F., & Co., Allentown, Pa.—Turbine water-wheel. A 48, and *pump annex.* 551
- 561** Hartford Pump Co., Hartford, Conn.—Compressed air pump. (*Pump annex.*) 551
- 562** Todd, John, Allentown, Pa.—Turbine water-wheel. D 77. 551
- 563** Bing, James, Philadelphia, Pa.—Turbine water-wheel. E 77. 551
- 564** Poole & Hunt, Baltimore, Md.—Turbine water-wheels and gearing. C 79. 551
- 565** Cox & Sons, Bridgeton, N. J.—Turbine water-wheels. C 32. 551
- 566** York Manufacturing Co., York, Pa.—Turbine water-wheels. D 78. 551
- 567** National Water-Wheel Co., Bristol, Conn.—Turbine water-wheels. D 77. 551
- 568** Barber & Son, Allentown, Pa.—Globe flume, with turbine wheel. D 77. 551
- 569** Brown, Son, & Co., Brookville, Pa.—Turbine water-wheels. D 78. 551
- 570** Cope, E. T., & Sons, West Chester, Pa.—Turbine water-wheel, with watertight gates opening separately. (*Pump annex.*) 551
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- 572** Riandon, T. H., & Co., Mount Holly, N. J.—Turbine water-wheel. (*Pump annex.*) 551
- 573** Walton, Silas, Moorestown, N. J.—Turbine water-wheel. (*Pump annex.*) 551
- 574** Alcott, Thos. J., Mount Holly, N. J.—Turbine water-wheel. D 78. 551
- 575** Tait, Thomas, Rochester, N. Y.—Water-wheel. (*Pump annex.*) 551
- 576** Knowlton & Dolan, Logansport, Ind.—Turbine water-wheel. (*Pump annex.*) 551
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- 579** Portable steam engine. D 78, and *boiler house.* 552
- 580** Abendroth & Root Manufacturing Co., New York, N. Y.—Wrought iron sectional safety boiler. (*Boiler house.*) 552
- 581** Fields, Wm., Wilmington, Del.—Motor-power model-dumping coal wagon. B 79. 552
- 582** Bolles, J. N., Baltimore, Md.—Steam engine. A 56, and *outside.* 552
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- 584** Wetherill, Robt., & Co., Chester, Pa.—Steam engine, with self-packing piston. B 69. 552
- 585** Baird & Huston, Philadelphia, Pa.—Steam engines. D 38-40. 552
- 586** Lobdell Car Wheel Co., Wilmington, Del.—Portable steam engine and boiler. E 65. 552
- 587** Cornell University Machine Shop, Ithaca, N. Y.—Steam engine. B 68. 552
- 588** Rider, Wooster, & Co., Walden, N. Y.—Compression engines, operating with valves, using compressed and heated air. B 8o. 552
- 589** Lovegrove & Co., Philadelphia, Pa.—Steam engine. B 75, and *boiler house.* 552
- 590** Seigneuret, H. J., Henderson, Minn.—New motive power. E 40. 552
- 591** Middleton, John W., Philadelphia, Pa.—Non-explosive steam and atmospheric engines, air-contraction and expansion engine. C 77. 552
- 592** Wardwell, George J., Rutland, Vt.—Stationary and portable valveless steam engines. B 77. 552
- 593** Moorhouse, R. O., & Co., Philadelphia, Pa.—Steam engine, with gear for variable expansion adjusted by the governor. B 73. 552
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- 596** Hussey, Charles A., New York, N. Y.—Electro-magnetic engines. E 69. 552
- 597** Gladwin, Charles P., Philadelphia, Pa.—Plain-slide valve steam engines with governor and automatic stop and speeder. B 71, and C 77. 552
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- 599** Mansfield Machine Works, Mansfield, Ohio.—Stationary engine, with balance steam valves. B 71. 552
- 600** Shapley & Wells, Binghamton, N. Y.—Steam engines. D 79, and *boiler house.* 552

MACHINERY.**Engines, Belting, Etc.**

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- 601** New York Safety Steam Power Co., New York, N. Y.—Launch engines, stationary engine, combined engine and boiler. E 38-40. 552
- 602** Lynde, J. D., Philadelphia, Pa.—Duplex engine. B 71, and boiler house. 522
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- 605** Copeland & Bacon, New York, N. Y.—Reversible winding engine, and differential geared hoisting engine. E 78, and boiler house. 552
- 606** McCutchen, John F., Philadelphia, Pa.—Block for eccentric hooks of steam engine. B 77. 552
- 607** Meeker, D. M., & Sons, Newark, N. J.—Part of cylinder of the first steam engine used in America. B 76. 552
- 608** Griffith & Wedge, Zanesville, O.—Vertical portable engine. D 77. 552
- 609** Klein, Chas. C., Philadelphia, Pa.—Eccentric piston engine. C 74. 552
- 610** Jeffery, Thos. B., Chicago, Ill.—Rotary steam engines. B 77. 552
- 611** Hartford Foundry and Machine Co., Hartford, Conn.—Automatic and variable cut-off non-condensing steam engine. (*Annex.*) 552
- 612** Twiss, Nelson W., New Haven, Conn.—Vertical engine, yacht engine. C 79. 552
- 613** Blandy, H. & F., Zanesville, Ohio.—Portable, agricultural, and saw-mill engines, and stationary engine. B 68. 552
- 614** Erie City Iron Works, Erie, Pa.—Stationary engine, horizontal engine. C 76. 552
- 615** Otis Bros. & Co., New York, N. Y.—Furnace engine for hoisting purposes. B 38. 552
- 616** Bastet Magnetic Engine Co., Philadelphia, Pa.—Magnetic engines for sewing machines, organs, lathes, pumps, etc. B 75. 552
- 617** Wells Balance Engine Co., New York, N. Y.—Double piston engine. C 77. 552
- 618** Niagara Steam Pump Works, Brooklyn, N. Y.—Miniature engine. (*Pump annex.*) 552
- 619** Brown, C. H., & Co., Fitchburg, Mass.—Automatic regulating cut-off steam engine. (*Saw mill.*) 552
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- 621** Forepaugh, Wm. F., jr., & Bros., Philadelphia, Pa.—Leather-rolling machine. D 66. 553
- 622** Eckfeldt & Richie, Philadelphia, Pa.—Oak-tanned leather butts, belting and fire hose. D 65. 553
- 623** Page Belting Co., Concord, N. H.—Leather belting and lace leather; driving belt (in use). D 64. 553
- 624** Roebling's Sons, John A., & Co., Trenton, N. J.—Wire rope, rigging, rope fastenings, bridge cables, rods, telegraph wire, etc. C 64. 553
- 625** Alexander Brothers, Philadelphia, Pa.—Oak-tanned leather belting, samples; driving belt (in use). D 64. 553
- 626** Cresson, Geo. V., Philadelphia, Pa.—Pulleys, hangers, couplings, wall boxes, pillow blocks, etc. C 71-73. 553
- 627** Heim, Anton, New York, N. Y.—Leather belting, hydraulic packing leather, tympan skins, lace leather, picker leather, elastic pulley; driving belt (in use). C 71. 553
- 628** Branch, Crookes, & Co., St. Louis, Mo.—Adjustable countershaft hanger and belttightener. (*Saw mill.*) 553
- 629** Rorer, Thomas I., Philadelphia, Pa.—Combined leather and canvas belting. D 65. 553
- 630** American Tubular Iron and Steel Association, Philadelphia, Pa.—Tubular iron and steel car axles, shafting, columns, bars. C 70-73. 553
- 631** Pennsylvania Combined Iron and Steel Association, Philadelphia, Pa.—Combined iron and steel rails, beams, girders, shafting plates, horse shoe and merchant bars. C 70-73. 553
- 632** Jones & Laughlin, Pittsburgh, Pa.—Bar, sheet, and plate iron, T-rails, shafting, hangers, pulleys, couplings. C 65 and 70. 553
- 633** Schieren, Charles A., New York, N. Y.—Oak-tanned leather belting; double belt (in use). D 64. 553
- 634** Charlton, John, Philadelphia, Pa.—Internal clamp coupling for shafting, main driving pulley, with internal clamp hub. C 71 and 73. 553
- 635** Hoyt, J. B., & Co., New York, N. Y.—Oak-tanned sole leather and belting. D 69. 553
- 636** Royer, H., San Francisco, Cal.—Fullled rawhide, belting, lacing, rope. D 66. 553
- 637** Charfield, Underwood, & Co., New York, N. Y.—Angular belting. D 65. 553
- 638** New Jersey Car Spring and Rubber Co., Jersey City, N. J.—Rubber belting and packing. C 74. 553
- 639** Jewell, P., & Sons, Hartford, Conn.—Leather belting, metallic-tipped belt lacings. D 67. 553
- 640** Mason, Volney W., & Co., Providence, R. I.—Friction clutches and pulleys, adjustable hangers. D 66, and *pump annex.* 553
- 641** Poole & Hunt, Baltimore, Md.—Shafting and appurtenances. C 79. 553
- 642** Gates, Josiah, & Sons, Lowell, Mass.—Leather belting, hose, lacing, and worsted apron leather and fire supplies. C 78. 553
- 643** Burgess & Son, Providence, R. I.—Leather belting, lace leather, picker leather, loom pickers. C 70. 553
- 644** Cook, A. B., & Co., Erie, Pa.—Adjustable dead pulleys, wooden belt pulleys, and taper sleeve pulleys. D 72. 553
- 645** Wright, James W., Minneapolis, Minn.—Propeller engine model. (*Annex.*) 554

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- 646 Brown, Edward, Philadelphia, Pa.**—Pyrometers for blast furnaces, bakers' ovens, tempering steel, etc.; revolution indicators. D 65. 555
- 647 Woodruff, Joseph, Rahway, N. J.**—Balanced steam damper regulator. D 16. 555
- 648 Wickersham & Bro., Philadelphia, Pa.**—Oil feeder, brass and glass oil cups. D 76. 555
- 649 Pancoast & Maule, Philadelphia, Pa.**—Steam and hot water house heating apparatus, vertical tube radiators, pipe cutter. D 75. 550
- 650 New York Belting and Packing Co., New York, N. Y.**—Rubber belting, packing, hose, tubing, car springs, vulcanite emery wheels, etc. D 75. 555
- 651 Sykes, L., & Son, Philadelphia, Pa.**—Bolts, nuts, washers, car trucks, roof trusses, bridges, track bolts, chord links, forgings, etc. D 75. 555
- 652 Belfield, H., & Co., Philadelphia, Pa.**—Brass and iron valves, cocks, steam gauges, whistles, gongs, steam fitting apparatus, etc. D 74. 555
- 653 Allen's Sons, Josiah J., Philadelphia, Pa.**—Anti-lamina, for preventing and removing scale from boilers. D 76. 555
- 654 Stilwell & Bierce Manufacturing Co., Dayton, Ohio.**—Lime extracting heater and filter. D 80. 555
- 655 Shive Governor Co., Bethlehem, Pa.**—Governor, combination spring motor, watchman's register, clock and time detector. D 69. 555
- 656 Waters, C., & Co., Boston, Mass.**—Steam engine governors. D 74. 555
- 657 Buffalo Steam Gauge and Lantern Co., Buffalo, N. Y.**—D 72.
- a Steam gauges. 555
 - b Locomotive head light with patent burner, hand lantern. 576
- 658 Lehman, B. E., Bethlehem, Pa.**—Gauge cocks, water gauges, oil cups, gate valves. D 70. 555
- 659 American Oil Cabinet Co., Boston, Mass.**—Safety oil cabinets. D 72. 555
- 660 Lyman, A. E., & Wife, Brooklyn, N. Y.**—Metallic packing, for steam cylinders. B 57. 555
- 661 Utica Steam Gauge Co., Utica, N. Y.**—Gauges, marine clocks, revolution counters, gauge testing apparatus. D 73. 555
- 662 Cleveland Steam Gauge Co., Cleveland, Ohio.**—Gauges, spring balances, test pump and gauge. D 72. 555
- 663 Aultman, Miller, & Co., Akron, Ohio.**—Self-registering dynamometer. D 68. 555
- 664 Davis & DuBois, Philadelphia, Pa.**—Tallow cups for engines, etc. D 68. 555
- 665 Lynde, J. D., Philadelphia, Pa.**—Governors, valves, feed water heaters, regulators and low water alarm combined. B 71, and boiler house. 555
- 666 Union Water Meter, Co., Worcester, Mass.**—Water meters, steam gongs, governor valves, steam and water regulators. B 70. 555
- 667 Kline, Aaron K., Sommerville, N. J.**—Governor for steam engines. D 69. 555
- 668 Haurey, Henry F., Newark, N. J.**—Flue and tube brushes. D 69. 555
- 669 Jenkins, Wm. H., & Co., Philadelphia, Pa.**—Boiler feeder, steam trap, damper regulator, low water alarm, safety valve, steam gauges. D 77. 555
- 670 Williams, E. A., & Son, Jersey City, N. J.**—Anti-friction and diamond metals, brass castings. D 75. 555
- 671 Post & Co., Cincinnati, Ohio.**—D 72.
- a Steam gauges. 555
 - b Railway passenger-car trimmings, locomotive head-lights. 576
- 672 Greenwich Machine Works, Greenwich, N. Y.**—Water-wheel governor. A 30. 555
- 673 Tracy, Eliashib, Philadelphia, Pa.**—Injector for boilers. D 68. 555
- 674 Hartford Governor Co., Hartford, Conn.**—Water-wheel governor. D 69. 555
- 675 Lathrop Anti-friction Co., New York, N. Y.**—Carbon composition machinery lubricator. D 68. 555
- 676 Asbestos Patent Fibre Co., Philadelphia, Pa.**—Fibre, yarn, paper, board. D 69. 555
- 677 Davis, J. B., Hartford, Conn.**—Feed water heater and purifier. D 68. 555
- 678 Metallic Brush Co., Boston, Mass.**—Machine for making metallic brushes. D 68. 555
- 679 Brown, Fergus, & Co., Philadelphia, Pa.**—Injector. (*In use in building.*) 555
- 680 Brown & Fergus, Philadelphia, Pa.**—Steam injector for steam boilers. (*In building.*) 5*i*
- 681 Le Van, W. Barnet, Philadelphia, Pa.**—Steam engine governors, damper regulator, and furnace grate bars. D 70. 555
- 682 Willoughby, James D., Philadelphia, Pa.**—Governor for steam engines. D 68 and 5*i*, and pump annex. 555
- 683 Woodruff, A. H., Lansing, Iowa.**—Reverse and expansion gear for locomotives and propeller engines. D 69. 555
- 684 Snyder, Henry, & Co., Philadelphia, Pa.**—Tube and flue brush. D 78. 555
- 685 Newell, Wm. H., Philadelphia, Pa.**—Injector valves. (*In building.*) 555
- 686 Allen, Stillman B., Boston, Mass.**—Governor for steam engines. D 72. 555
- 687 Osgood, Josiah A., Boston, Mass.**—Crank pin oiler, metallic spring packing, etc. D 69. 555
- 688 McNab & Harlin Manufacturing Co., New York, N. Y.**—Valves, cocks, whistles, water gauges, iron fittings, plumbers' materials. B 40. 555
- 689 Edson Gauge Manufacturing Co., New York, N. Y.**—Gauges, electrical alarms, revolution counters. D 67. 555
- 690 Schutte & Goehring, Philadelphia, Pa.**—Steam jet machinery, furnace blowers, ventilators, injectors, siphons, gas exhausters, condensers, etc. (*Pump annex.*) 555
- 691 Lonergan & McBride, Philadelphia, Pa.**—Oil cups and lubricators. D 68. 555

MACHINERY.

Pumps, Engines.

- 692 Silver Lake Co., Boston, Mass.**—Self-lubricating steam packing. D 68. 555
- Hydraulic and Pneumatic Apparatus, Pumping, Hoisting, and Lifting.**
- 693 Dart, Edward & Co., New York, N. Y.**—Rotary pumps and engines, marine governors, cotton gins, presses, duplex plunger crank steam pump. (*Pump annex.*) 560
- 694 Cooper, Jones, & Cadbury, Philadelphia, Pa.**—Pumps. B 19. 560
- 695 Silsby Manufacturing Co., Seneca Falls, N. Y.**—Rotary steam pump. A 4. 560
- 696 Valley Machine Co., Easthampton, Mass.**—Bucket-plunger steam pumps. (*Pump annex.*) 560
- 697 Kelly, Wm. E., New Brunswick, N. J.**—Steam pumps. (*Pump annex and boiler house.*) 560
- 698 Aquometer Steam Pump Co., Philadelphia, Pa.**—Steam pumps. (*Pump annex.*) 560
- 699 Hubbard & Aller, Brooklyn, N. Y.**—Steam pumps. (*Pump annex.*) 560
- 700 Union Manufacturing Co., New Britain, Conn.**—Iron and brass cistern; force, yard, drive well; garden engines, boiler, pumps, and rams. (*Pump annex.*) 560
- 701 Wiswall, H. M., Boston, Mass.**—Rotary and oscillating pumps. (*Pump annex.*) 560
- 702 Norwalk Iron Works Co., South Norwalk, Conn.**—Direct acting non-expansive steam pumps. C 76. 560
- 703 La France Manufacturing Co., Elmira, N. Y.**—P 11, and *pump annex.*
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- 704 Rumsey & Co. (Limited), Seneca Falls, N. Y.**—Pumps, hydraulic rams. B 45, and *pump annex.* 560
- 705 Carr, Adam, New York, N. Y.**—Steam pump, steam radiator, hoisting engine, condensers. (*Pump annex and boiler house.*) 560
- 706 Douglas, W., & B., Middletown, Conn.**—Pumps, hydraulic rams, pump chain, garden engines, curbs, chain pump fixtures; grindstone frame. (*Pump annex.*) 560
- 707 Vail & Wallace, Keokuk, Iowa.**—Water elevator. (*Pump annex.*) 560
- 708 Mitchell, J. H., Philadelphia, Pa.**—Deck pump for ship use. B 80. 560
- 709 Hooker, Wm. D., Dedham, Mass.**—Direct acting steam pumps. (*Pump annex.*) 560
- 710 Cotter, C. S., Ravenna, Ohio.**—Force and cistern pumps, etc. (*Pump annex.*) 560
- 711 Follensbee, Geo. S., Lewistown, Maine.**—Double propeller pump. (*Pump annex.*) 560
- 712 Grosvener, J. A., Jersey City, N. J.**—Pulsometer steam pump, operated by pressure of steam on surface of water. (*Pump annex.*) 560
- 713 Biggs, B. F., & Wells, La Fayette, Ind.**—Wooden lifting and suction pump. (*Pump annex.*) 560
- 714 King, Charles W., Boston, Mass.**—Force pumps and house pumps with removable cylinders. (*Pump annex.*) 560
- 715 White, Clark, & Co., Baldwinsville, N. Y.**—Centrifugal pump. (*Pump annex.*) 560
- 716 Poole & Hunt, Baltimore, Md.**—Feed water heater and pump. C 79. 560
- 717 Willoughby, James D., Philadelphia, Pa.**—Steam pump. D 51 and 68, and *pump annex.* 560
- 718 Bradley, J., & Co., Philadelphia, Pa.**—Odorless excavating apparatus. (*Pump annex.*) 560
- 719 Gawthrop, A., & Son, Wilmington, Del.**—Glass models of hydraulic rams with regulators, in operation. (*Pump annex.*) 560
- 720 Huffer, Abraham, Hagerstown, Md.**—Automatic steam vacuum pump. (*Pump annex.*) 560
- 721 Pease, F. S., Buffalo, N. Y.**—Pneumatic pump. (*Pump annex.*) 560
- 722 Colton, G. D., Galesburg, Ill.**—Steam vacuum lifting and forcing pumps. (*Pump annex.*) 560
- 723 Bagley & Sewall, Watertown, N. Y.**—Metal force pump with self-packing joints. (*Pump annex.*) 560
- 724 Niagara Steam Pump Works, Brooklyn, N. Y.**—Direct acting steam pump and crank pump. (*Pump annex.*) 560
- 725 Hydrostatic and Hydraulic Co., Philadelphia, Pa.**—Compound propeller pump for quarries, mines, etc. (*Pump annex.*) 560
- 726 Conde & Co., Philadelphia, Pa.**—Steam pumping engine. (*Pump annex.*) 560
- 727 Nye, Gourlay, & Co., Chicago, Ill.**—Steam vacuum pump. (*Pump annex.*) 560
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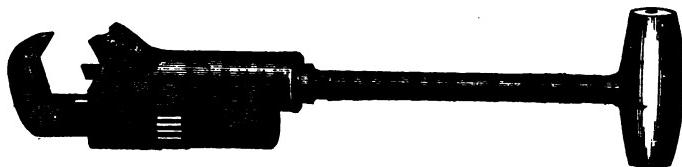
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- 737 Morris Co., I. P., Philadelphia, Pa.**—Blowing engine, blowing cylinder, steam cylinder, stroke of piston. B 48. 562
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- 750 Eccles, James, Philadelphia, Pa.**—Quadruple screw-power press, pivot centre for draw bridge, etc. (*Pump annex.*) 563
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- 762 Williams, S. S., & Co., Philadelphia, Pa.**—Hod elevator. (*Annex.*) 563
- 763 Goldmark, Joseph, New York, N. Y.**—Safety elevators for hotels, dwellings, and warehouses, operated by steam, water, or hand power. A 40. 563
- 764 Robertson, John, & Co., Brooklyn, N. Y.**—Hydraulic pumps, hydraulic presses. (*Pump annex.*) 563
- 765 Ross, Thos. Rutland, Vt.**—Steam crane. (*Annex.*) 563
- 766 Randall, Francis M., New York, N. Y.**—Automatic steam and vacuum pump. (*Pump annex.*) 563
- 767 Jones & Holmes, Providence, R. I.**—Water elevators for open wells. (*Outside of building.*) 563
- 768 Bates, James, Baltimore, Md.**—Hand elevator. (*Pump annex.*) .. 563
- 769 Yale Lock Manufacturing Co., Stamford, Conn.**—Safety hoisting machinery, friction clutches and brakes, differential pulleys, drilling braces, stud end cutter. C 78. (*Outside.*) 563
- 770 Foulds, Thomas, Jr., Trevorton, Pa.**—Water elevator. (*Pump annex.*) 563
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- 780 Schanz, C., Philadelphia, Pa.**—Hook and ladder truck for firemen. B 54-56. 564
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- 782 Babcock Manufacturing Co., New York, N. Y.**—Chemical engines, hook and ladder trucks, truck and engine combined, fire extinguishers. D 23. 564
- 783 Platt, Wm. K., & Co., Philadelphia, Pa.**—Fire extinguishers. B 49. 564

MACHINERY.

Fire Engines, Soda Apparatus, Tubing and Fittings.

- 784 Vose, Wm. T., Boston, Mass.**—Hydroplult, for extinguishing fires, washing and watering purposes. A 4. 564
- 785 Spawn, A. F., & Co., New York, N. Y.**—Chemical fire engines, hose carriage, hook and ladder truck, firemen's supplies. B 64-66. 564
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- 797 Thomas & Joerna, New York, N. Y.**—Model of sectional and telescopic screw, for fire escape, and raising heavy weights. B 45. 564
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- 808 Postens, Edward, Philadelphia, Pa.**—Soda water and aerated beverages in bottles; apparatus and accessories. A 25. 565
- 809 Tufts, James W., Boston, Mass.**—Soda water apparatus, generators, fountains, tumbler washers, etc. A 18. 565
- 810 Chapman & Co., Madison, Ind.**—Portable soda fountain. A 28. 565
- 811 Fergus, James, & David, Philadelphia, Pa.**—Machine for bottling and corking liquors. A 22. 565
- 812 Hey, Michael, Philadelphia, Pa.**—Beer pump, with bar fixtures, water pressure machine, beer cooler, air bung and regulator. E 68. 565
- 813 Lalance & Grosjean Manufacturing Co., New York, N. Y.**—Seamless soda water fountains and generators of steel, sheet iron, copper, and glass. A 21. 565
- 814 Morris, Tasker, & Co., Philadelphia, Pa.**—Wrought iron tubes, tools, and brass work. A 70, and C 27. 566
- 815 Kirk, Geo. R., Philadelphia, Pa.**—Patent regulating cylinder lubricator, with gauge showing contents, brass cocks, and valves. B 19. 566
- 816 Woodruff & Beaumont, Kankakee City, Ill.**—Stop valve. B 19. 566
- 817 Flower, James, & Bro., Detroit, Mich.**—Stop valve, fire hydrant, machine for squaring nuts, oil cups. D 20. 566
- 818 Evans, Dalzell, & Co., Pittsburgh, Pa.**—Boiler, oil-well, radiator, artesian and hydraulic tubing; wrought iron pipe, coils, sockets, nipples, and fancy designs. B 25. 566
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- 820 Mohawk and Hudson Manufacturing Co., Waterford, N. Y.**—Straightway valves, garden hydrants, fire hydrants. B 21. 566
- 821 Dreyer, Simpson, & Co., Philadelphia, Pa.**—Arrangement of steam and water pipes, in exhaust chamber. B 19. 566
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- 826 Meyer, Henry C., & Co., New York, N. Y.**—Faucets, anti-freezing hydrants, street washers, combined hitch post and street washer. B 27. 566
- 827 Crosby Steam Gauge and Valve Co., Boston, Mass.**—Steam gauges and safety valves, hydraulic and vacuum gauges, etc. D 67. 566

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- 828 Cook & Pulver, New York, N. Y.**—Lubricating cups, and lubricating compound. D 69. 566
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- 831 Wood, R. D., & Co., Philadelphia, Pa.**—Fire hydrants, cast iron pipe, eddy valves, lamp posts, turbine wheels, duplex turbine. B 18, and *Pump annex.* 566
- 832 Roots, P. H., & F. M., Connersville, Ind.**—Tuyere irons and fire bed, bye pass, gas valves. (*Pump annex.*) 566
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- 835 Merchant & Co., Philadelphia, Pa.**—Seamless brass and copper tubes, sheet and planished copper, brass wire and tubing, tin plates. B 20. 566
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- 838 Ludlow Valve Manufacturing Co., Troy, N. Y.**—Fire hydrants with valves partly of rubber, sliding stop valves. B 22. 566
- 839 Lunkenheimer, Fred., Cincinnati, Ohio.**—Automatic lubricators and glass oil-cups, brass castings. B 21. 566
- 840 Stileman, R. T. H., Philadelphia, Pa.**—Water gates, fire hydrants, and station valves. B 19. 566
- 841 Stephens, Melvin, New York, N. Y.**—Cement-lined wrought iron water pipe. B 22. 566
- 842 J. L. Mott Iron Works, New York, N. Y.**—Plumbers' cast iron ware, plain, galvanized, and enameled. B 25. 566
- 843 Walworth Manufacturing Co., Boston, Mass.**—Steam cocks and valves. A 76, E 75, and B 41. 566
- 844 Radde, William, New York, N. Y.**—Glass-lined iron pipe and fittings, underground telegraph system. B 20. 566
- 845 Chapman Valve Manufacturing Co., Boston, Mass.**—Water, gas, and steam valves, with metal seats. B 20 and 40. 566
- 846 Jardecki Manufacturing Co., Erie, Pa.**—Brass work for steam, gas, water, oil, and iron fittings, adjustable pipe tongs. B 20. 566
- 847 Starr, Jesse W., & Son, Camden, N. J.**—Castings for gas and water, lamp posts, fire hydrants, stop valves, etc. (*Outside of building.*) 566
- 848 Colwell Lead Co., New York, N. Y.**—Lead pipe, sheet lead, block tin pipe, tin-lined lead pipe. B 22-25. 566
- 849 Long, Dennis, & Co., Louisville, Ky.**—Cast iron gas and water pipes. B 20. 566
- 850 Weir, Fred. C., Cincinnati, Ohio.**—Telescopic fire hydrant. D 69. 566
- 851 O'Neill, Andrew, Ansonia, Conn.**—Pipes. B 23, and *outside.* 566
- 852 Mills, Thomas, & Bro., Philadelphia, Pa.**—Vertical engine and ice cream freezer combined, ice cream freezers and freezing apparatus. E 65. 568
- 853 Knickerbocker Ice Co., Philadelphia, Pa.**—Ice tools, elevators, wagons, and ice machinery. B 18. 568
- 854 Low, David W., Gloucester, Mass.**—Ice crushers. B 19. 568
- Railway Plant, Rolling Stock, and Apparatus.**
- 855 Burnham, Parry, Williams, & Co., Philadelphia, Pa.**—Locomotives. E 41-43, and E 7. 570
- 856 Pease, James H., Reading, Pa.**—Historical chart of inventions and improvements of the locomotive and railway system. E 71. 570
- 857 Rogers Locomotive and Machine Works, Paterson, N. J.**—Locomotive engine, and tender. D 41, 42, 43. 570
- 858 Danforth Locomotive and Machine Co., Paterson, N. J.**—Locomotives. D 28 and 41. 570
- 859 Wright, James W., Minneapolis, Minn.**—Locomotive engine model. D 79. 570
- 860 Rowand, John R., Philadelphia, Pa.**—Locomotive-power brake. E 48. 570
- 861 Porter, Bell, & Co., Pittsburg, Pa.**—Narrow-gauge passenger locomotive and tender. E 44-46. 570
- 862 Shaw & Gray, South Boston, Mass.**—Model showing method of balancing locomotive driving wheels. D 52. 570
- 863 Philadelphia and Reading Railroad Co., Philadelphia, Pa.**—Locomotive and tender. D 44-47. 570
- 864 Dickson Manufacturing Co., Scranton, Pa.**—Locomotive and mining machinery. E 49-53. 570
- 865 Pennsylvania Railroad Co., Altoona, Pa.**—Locomotive built in 1831, baggage and passenger car combined (old style). (*Outside of Building.*) 570
- 866 Griggs, H. W., Milwaukee, Wis.**—Working drawings of passenger locomotive, in ink. D 49. 570
- 867 Riehle Bros., Philadelphia, Pa.**—Scales, testing machines, beams, rope-twisters, sand-sifters. E 54. 571
- 868 Fairbanks & Ewing, Philadelphia, Pa.**—Scales, testing machines, etc. E 56-60. 571
- 869 Brandon Manufacturing Co., Brandon, Vt.**—Railroad, merchandise, post-office, and other scales, beams and trucks. E 61-63, and D 8. 571
- 870 Dell, John C., Philadelphia, Pa.**—Scales and weights. D 62. 571
- 871 Buffalo Scale Co., Buffalo, N. Y.**—Platform and counter scales. D 54. 571
- 872 Shive Governor Co., Bethlehem, Pa.**—Scales, egg beater. D 60. 571
- 873 Becker & Sons, New York, N. Y.**—Balances and weights. D 51. 571

MACHINERY.

Scales, Railway Plant.

- 874** Meyers, F., Newark, N.J.—Scales. D 53. 571
- 875** Hitchcock, S. S., Des Moines, Iowa.—Scales. D 47. 571
- 876** Cleveland Scale Works Co., Cleveland, Ohio.—Railroad track scale, with indicator. D 60. 571
- 877** Chicago Scale Co., Chicago, Ill.—Weighing scales. D 58. 571
- 878** Reilly, C. Leslie, Philadelphia, Pa.—Cylinder beam scale. E 77. 571
- 879** Willoughby, James D., Philadelphia, Pa.—Notifying scales, frictionless scales. D 8 and 51. 571
- 880** Chatillon, John, & Sons, New York, N.Y.—Spring balances, self-adjusting scales, counter scales, scale beams. D 50. 571
- 881** Morton, Thos., New York, N.Y.—Spring balances. D 62. 571
- 882** Automatic Scale Co., Harrisburg, Pa.—Automatic scale for grain and feed. D 53. 571
- 883** Price, Lipsett, & Co., Philadelphia, Pa.—Railroad track scale, platform scales. E 76. 571
- 884** Spencer's Sons, I. S., Guilford, Conn.—Family scales, with dial indicator. E 77. 571
- 885** Gray, Solomon S., South Boston, Mass.—Automatic weighing scales. D 51. 571
- 886** Steinway & Sons, New York, N.Y.—Metal frames for pianofortes, piano-forte actions. D 49. 571
- 887** National Scale Co., Philadelphia, Pa.—Portable platform and counter scales. D 51. 571
- 888** Reinhardt, Chas., Brooklyn, N.Y.—Druggists', gold, and diamond scales. D 62. 571
- 889** Henderson Hydraulic Car Brake Co., Philadelphia, Pa.—Car brake, by steam or hydraulic pressure. D 64-66. 572
- 890** Labaye, J. J., Reading, Pa.—Model cars with automatic couplings. D 64. 572
- 891** Barton, C. S., Philadelphia, Pa.—Railway station indicator, operated from engine by compressed air or by hand. D 64. 572
- 892** Gerard, Peter, Philadelphia, Pa.—Snow plow for locomotives, axle grease, oil. D 64. 572
- 893** Thompson, Thomas E., Philadelphia, Pa.—Automatic and momentum car brake. D 64. 572
- 894** Kline, Aaron K., Somerville, N.J.—Model of car coupling. D 60. 572
- 895** Nelson, Nels, Minneapolis, Minn.—Steam and air car brake, car coupler. D 65. 572
- 896** Bing, James, Philadelphia, Pa.—Brake shoe. E 77. 572
- 897** Westinghouse Air Brake Co., Pittsburgh, Pa.—Automatic brakes, vacuum brakes, air compressors, speed indicators, engine governors, engine. D 67. 572
- 898** Cobb, Z., & Sons, Wilmington, Del.—Elliptic steel springs, for car seats and upholsterers, door springs. E 68. 573
- 899** Cayuta Wheel and Foundry Co., Waverly, N.Y.—Chilled wheels for cars and engines; specimens and tests. E 64. 573
- 900** Lobdell Car Wheel Co., Wilmington, Del.—New and old railroad car wheels, tires, castings, etc. E 65. 573
- 901** Ramapo Wheel and Foundry Co., Ramapo, N.Y.—Railroad car and engine wheels. E 70. 573
- 902** Culmer Spring Co., Pittsburgh, Pa.—Springs for railway purposes. E 69. 573
- 903** Bryant, George B., Pottsville, Pa.—Car wheels, pulleys, vehicle hubs, etc. E 67. 573
- 904** French, A., & Co., Pittsburgh, Pa.—Elliptic and spiral springs for cars and locomotives. E 71. 573
- 905** Miltimore Car Axle Co., New York, N.Y.—Railroad car truck. E 70. 573
- 906** Tryon, Geo. K., Son, & Co., Philadelphia, Pa.—Car and other bearings and articles of phosphor-bronze, composition, Babbitt and type metal. E 64. 573
- 907** Davenport, Fairbairn, & Co., Erie, Pa.—Engines and car wheels. E 70. 573
- 908** Miles, W. A., Copake Iron Works, Copake, N.Y.—Car wheels. E 68. 573
- 909** Middleton, N., & A., & Co., Philadelphia, Pa.—Railroad car springs with section of trucks. E 70. 573
- 910** Barnum Richardson Co., Lime Rock, Conn.—Salisbury iron ore, charcoal pig iron, cast chilled car wheels. E 71. 573
- 911** Standard Steel Works, Philadelphia, Pa.—Crucible steel locomotive and car wheel tires, castings, and forgings. E 72. 573
- 912** Midvale Steel Works, Philadelphia, Pa.—Locomotivitires. C 23. 573
- 913** Lang, Wm. Bailey, & Co., New York, N.Y.—Cast steel locomotive tires. F 70. 573
- 914** Whitney, A., & Sons, Philadelphia, Pa.—Car wheels and axles. E 72. 573
- 915** American Paper Car Wheel Manufacturing Co., Hudson, N.Y.—Coach, truck and car wheels, of paper, steel and iron combined. E 65. 573
- 916** New Jersey Car Spring and Rubber Co., Jersey City, N.J.—Car springs. C 74. 573
- 917** Sax & Kear, Pittston, Pa.—Steel-tired truck and car wheels, with cast iron centres. E 73. 573
- 918** Harrison, Samuel L., San Francisco, Cal.—Railroad car axle, with independent wheels. E 72. 573
- 919** Schoem, Wm. H., Wilmington, Del.—Locomotive, car, and wagon springs. E 67. 573
- 920** Nichols, Pickering, & Co., Philadelphia, Pa.—E 71.
4 Railway elliptic, volute and spiral springs. 573
4 Cast steel nut-lock washers. 574
- 921** Fields, Wm., Wilmington, Del.—Cast steel rails, made direct from iron ore. E 64. 573
- 922** McKee, Fuller, & Co., Catasauqua, Pa.—Railroad car wheels. D 65. 573

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Bleached Drills and Ducks,	
Brown Ducks and Duck Coatings,	
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Pale Hollands,	
Blay Linens.	

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AGENTS IN THE UNITED STATES:

Messrs. WILSON & MERRILL, BOSTON.

Railway Plant, Machines for Agricultural Products.

- 923 Nashua Iron and Steel Co., Nashua, N. H.**—Steel plates, tires, axles, shaftings, bars, and forgings; iron axles, bars, plates, car wheels, and forgings. E 66. 573
- 924 Hamilton Steel Wheel Co., Philadelphia, Pa.**—Car wheels and specimens of metal, process of manufacture. D 68. 573
- 925 Jersey City Wheel Foundry and Machine Works, Jersey City, N. J.**—Elastic steel tired car wheels, chilled car wheels. D 68. 573
- 926 Raddin, John, Lynn, Mass.**—Elastic car and carriage wheels, automatic brakes, compensating wheels, bunters, elastic chains, etc. D 68. 573
- 927 Fisher & Norris, Trenton, N. J.**—Bolt rail joints. B 6, and annex. 574
- 928 Wharton Railroad Switch Co., Philadelphia, Pa.**—Railroad switch, steel rail frogs, steel rail crossing. D 71-73. 574
- 929 Weir, Fred. C., Cincinnati, Ohio.**—Combined switch and frog, reversible frog. D 69. 574
- 930 Jersey City Iron Works, Jersey City, N. J.**—Detachable steel rail frogs and crossings, safety switch stands, car replacer. D 71. 574
- 931 White, C. H., Detroit, Mich.**—Railroad safety switch. D 66. 574
- 932 Pennsylvania Steel Co., Harrisburg, Pa.**—Bessemer steel ingots, blooms, forgings, and rails, open hearth steel ingots and blooms, safety switch, steel rail crossing and frogs, car replacer. E 62. 574
- 933 Diamond Slate Iron Co., Wilmington, Del.**—Railway track fastenings and merchant bar iron. E 62. 574
- 934 Pratt Manufacturing Co., New York, N. Y.**—Elastic fish joints. E 62. 574
- 935 Bean, H., & B. F., Pawling, Pa.**—Mail pouch holder and catcher for railroad cars while in motion, draw heads for cars. D 66. 575
- 936 Rousseau Railway Signal Co., New York, N. Y.**—Electric railway signals, office indicators, switch locks, circuit closer, etc. D 67. 575
- 937 Wharton, Wm., Jr., Philadelphia, Pa.**—D 72.
 a Railway curves, street railway crossings, switches, and frogs. . 574
 b Railroad turn-table. . 575
- 938 Spahn, Emil P., Newark, N. J.**—Models for automatic railroad crossings, gates, and signals. D 67. 575
- 939 Ridge, Elmer, Philadelphia, Pa.**—Balance folding gates for railway crossings. D 65. 575
- Machines used in preparing Agricultural Products.**
- 940 Deal, M., & Co., Bucyrus, Ohio.**—Separator and smutter, brush smutter, warehouse separator, and mill machinery trucks, etc. E 57. 580
- 941 Bullock, C. K., Philadelphia, Pa.**—Flour mill machinery. E 52. 580
- 942 Farr, Rigby, & Co., Springfield, Ohio.**—Middlings purifier. E 57. 580
- 943 Empire Grain Decorticator Co., Pittsburgh, Pa.**—Grain decorticator, bran duster. E 57. 580
- 944 Howes, Babcock, & Co., Silver Creek, N. Y.**—Smut and separating machines, oat separator, brush finisher, bolting cloth. E 49. 580
- 945 Noye, John T., & Son, Buffalo, N. Y.**—Flour mill models, portable mills, millers tools, middlings purifier, bran duster. E 47. 580
- 946 Ingraham & Beard, Chicago, Ill.**—Grain scourer, smutter separator, grader, dustless malt and warehouse separator and grader. E 56. 580
- 947 Young, J. & S. Bernheisel, Green Park, Pa.**—Flour bolt and middlings purifier combined, with bran separator and duster attached. E 57. 580
- 948 Harris, Clinton S., Elizabeth, N. J.**—Smut and scouring machine, and suction fan for cleaning grain. E 58. 580
- 949 Richardson, D. M., Detroit, Mich.**—Wheat scourer, polisher, and separator. E 57. 580
- 950 Turner, Parks, & Co., Cuyahoga Falls, N. Y.**—Rolling screen separator, grain scourer. E 58, and outside, near annex. 580
- 951 Becker & Underwood, Dixon, Ill.**—Brush for cleaning and polishing wheat. E 59. 580
- 952 Barnard & Leas Manufacturing Co., Moline, Ill.**—Smutter, scourers, separator, flour packer, corn sheller, corn cleaner. E 48. 580
- 953 Chase Elevator Co., Peoria, Ill.**—Models of grain elevator and conveyer. E 61. 580
- 954 Woodward, Thos. B., Philadelphia, Pa.**—Mill stones, mills, flour mill machinery. E 46. 580
- 955 Baltimore Pearl Hominy Co., Baltimore, Md.**—Hominy mill or corn granulator. F 59. 580
- 956 Straub, A. W., & Co., Philadelphia, Pa.**—Vertical French burr mill stone, farm mill. E 59. 580
- 957 Griscom & Co., Pottsville, Pa.**—Diamond mill stone dressing machine. E 53. 580
- 958 Harrison, Edward, New Haven, Conn.**—Vertical burr stone mills for grain, minerals, etc. E 59. 580
- 959 Leonard & Silliman, Bridgeport, Conn.**—Burr stone flour and grit mills. E 56. 580
- 960 Lafferty, H. W., & R., Gloucester, N. J.**—Centrifugal sugar-draining machines, with mixer and elevator. E 46. 581
- 961 Mills, Thomas, & Bro., Philadelphia, Pa.**—Candy-cutting, fruit-dropping, cocoanut-cutting and grating machines. E 65. 582
- 962 Gardner, Mrs. John, Philadelphia, Pa.**—Confectionery tools, candy machinery. F 48. 582
- 963 Croft, Wilbur, & Co., Philadelphia, Pa.**—Revolving pans for making confec-tions. E 64. 582
- 964 Mitchell, J. H., Philadelphia, Pa.**—Cocoanut grater, candy slicer. B 80. 582
- 965 Anderson, J. P., Philadelphia, Pa.**—Cocoanut grater, candy slicer. 582

MACHINERY.

Agricultural Machines, Pneumatic, and Water Transportation.

- 966** Colburn, Levi J., Chicago, Ill.—Confectionery, process of manufacture. F 56. 582
- 967** Ordway, Albert, Richmond, Va.—Process of manufacturing plug and twist chewing and smoking tobacco, cigarettes. F 57. 584
- 968** Cain, P. O., & Co., Philadelphia, Pa.—Cigar moulds. F 55. 584
- 969** Enterprise Manufacturing Co., Philadelphia, Pa.—Coffee, drug, and spice mills, measuring faucets, tobacco cutters, cheese knives, sad irons, castings. F 56. 585
- 970** Dell, John C., Philadelphia, Pa.—Coffee mills. D 62. 585
- 971** Boyd, G., Philadelphia, Pa.—Coffee roaster, coffee cooler. (*Annex.*) 585
- 972** Kreider, Campbell, & Co., Philadelphia, Pa.—E 50.
a Grain mill. 580
b Spice mill. 585
- 973** Weikel & Smith Spice Co., Philadelphia, Pa.—Coffee roasting and spice mill machinery. (*Annex.*) 585
- 974** Troemner, Henry, Philadelphia, Pa.—Coffee mills. F 55. 585
- 975** McCollum, L. A., New York, N. Y.—Cracker machine, dough mixer, reversible dough brake, mechanical oven. E 66. 585
- 976** Silver & Deming Manufacturing Co., Salem, Ohio.—Meat choppers and meat stuffers. F 54. 586
- 977** Ruger, J. W., & Co., Buffalo, N. Y.—Cracker, bread, and cake machinery and bakers' tools. F 62. 586
- 978** Allen, H. Julian, Port Byron, N. Y.—Pneumatic evaporator. (*Pump annex.*) 586
- 979** Baker, George W., Wilmington, Del.—Machine for making crackers. F 60. 586
- 980** Sauter, Charles, Reading, Pa.—Malt cleaning machine, cylinder-wheel malt chopper. E 69. 587
- 981** Reford, J. W., Philadelphia, Pa.—Grain-distilling and vapor-rectifying apparatus. E 69. 587
- 982** Boese, C., & Co., New York, N. Y.—Capping machines, for adjusting metallic capsules on bottles, jars, etc. E 68. 587
- Aerial, Pneumatic, and Water Transportation.**
- 983** Hartness, James, Detroit, Mich.—Section balloon, with life-boat attached. D 32. 592
- 984** Swarzmayr, John, Philadelphia, Pa.—Flying machine model. D 33. 592
- 985** Page, E. W., New York, N. Y.—Boat oars. D 32. 594
- 986** Bolles, J. N., Baltimore, Md.—Models for submarine work. A 56, *and outside.* 594
- 987** Fields, William, Wilmington, Del.—Models of armor-ship, and field-battery gun. E 64. 594
- 988** Chomel, I. A., Brooklyn, N. Y.—Swinging berths and platforms for prevention of sea-sickness. D 31. 594
- 989** Grinnell, Irving, New Hamburg, N. Y.—Ice yacht. D 28-31. 594
- 990** Wilen, George C., Philadelphia, Pa.—Small boat. D 32. 594
- 991** Richards, H. J., West Troy, N. Y.—Ice yacht. D 34. 594
- 992** Walton, Lewis W., New York, N. Y.—Row-lock for boats. D 35. 594
- 993** Dammon, Samuel H., New Bedford, Mass.—Model of ocean yacht. D 34. 594
- 994** Desmond, Timothy, New York, N. Y.—Pair-oared gig. D 36. 594
- 995** Adams, John, & Co., Gloucester, N. J.—Life preserving mattress, self-righting life-boat. D 33. 594
- 996** Waters, E., & Sons, Troy, N. Y.—Paper boats, barrels, packages, cylinders, etc. D 34-37. 594
- 997** Bryant, John L., & Co., Philadelphia, Pa.—Double life boat. D 33. 594
- 998** Von Behren & Shaffer, Stryker, Ohio.—Boat oar, handspike. D 38. 594
- 999** Smith, D. S., Philadelphia, Pa.—Canoe, "Dolphin," of Queenstown, Md. D 38. 594
- 1000** Jones, John McA., Philadelphia, Pa.—Boat-detaching apparatus. D 32. 594
- 1001** Begin, Peter N., Detroit, Mich.—Revolving head light for vessels. D 34. 594
- 1002** Hook, Gilman, West Harwich, Mass.—Toy yacht. D 32. 594
- 1003** Rider Life Raft Co., New York, N. Y.—Life rafts. D 55. 594
- 1004** Miles, Geo. W., Philadelphia, Pa.—Single scull shell. D 40. 594
- 1005** McGilvery, S. W., Belfast, Maine.—Model for clipper ship. D 5. 594
- 1006** Merriman, Clark S., New York, N. Y.—Water proof life-saving dress. D 31. 594
- 1007** United States Bunting Co., Lowell, Mass.—Buntings and flags. F 40. 594
- 1008** Massachusetts Commission, Boston, Mass.—Models of ships, yachts, and other vessels, old and new styles. F 38-40. 594
- 1009** American Life-Saving Suit Co., New York, N. Y.—Life-saving suit for ocean travel, surf belt for river travel. D 33. 594
- 1010** Wyatt, John L., Yonkers, N. Y.—Full rigged clipper South Sea whale ship. E 38. 594
- 1011** Gildersleeve, S., & Sons, Gildersleeve's Landing, Conn.—Working models of steam and sail vessels. D 40. 594
- 1012** Poillon, C., & R., New York, N. Y.—Model of schooner yacht "Sappho" and pilot boats "Thomas S. Negus," of N. Y., and "E. C. Knight," of Philadelphia. E 39. 594
- 1013** Webb, Wm. W., New York, N. Y.—Models and plans of celebrated naval and other vessels. D 31. 594
- 1014** Cannon, John D., New Castle, Del.—Hooped skiff boat, without timbers or knees. D 40. 594
- 1015** Baird & Huston, Philadelphia, Pa.—Steam yacht. D 38-40. 594

Ships' Models and Appliances.

- 1016 Harlan & Hollingsworth Co.,** Wilmington, Del.—Ships, models, drawings, and plans of vessels and machinery, paintings of ships and steamboats. D 29. 595
- 1017 Griffiths, John W., New York, N. Y.**—Model of ocean steamship; "The Progressive Ship Builder." B and E 74. 595
- 1018 Zantsinger, Dan'l W., Washington,** D. C.—Model and section of steamship, improvement in construction of iron vessels. E 5. 595
- 1019 Grant, D. Conrad, Houghton,** Mich.—Adjustable ice plow and naval ram, or submarine mortar, attached to miniature boat. E 5. 595
- 1020 New York Safety Steam Power Co.,** New York, N. Y.—Steam launch. E 38-40. 595
- 1021 Crowell, J. W., & Co., Cambridge,** Md.—Models for steam and sail vessels. D 5. 595
- 1022 Thwait, Charles, Astoria, N. Y.**—Model of steamship, with working machinery. D 35. 595
- 1023 Pennsylvania Combined Iron and Steel Association, Philadelphia, Pa.**—Combined iron and steel armor plate, steel bore wrought iron guns. D 28-30. 595
- 1024 American Dredging Co., Philadelphia, Pa.**—Crapple dredge, dipper dredge. E 40. 596
- 1025 Cox, Frank, Philadelphia, Pa.**—Model for coffer dam for removing propellers from ships. E 40. 596
- 1026 Coffin & Woodward, Boston,** Mass.—Capstans, chain stopper, screw steerer, and rudder supporter, elastic traveler, portable winch, windlasses. D 39. 597
- 1027 Providence Steam Engine Co., Providence, R. I.**—Original models. D 38. 597
- 1028 Getchett, John S., Washington,** Maine.—Capstan. D 40. 597
- 1029 American Ship Windlass Co., Providence, R. I.**—Capstans, windlass models. D 5. 597
- 1030 Hutchinson, T. C., Philadelphia, Pa.**—Anchor. D 5. 597

GREAT BRITAIN.

(South of North Avenue, Columns 6 to 17, A to E; also in Pump Annex.)

Metal, Wood, Stone, Cloth-Working Machines.

- Machines, Tools, and Apparatus of Mining, Metallurgy, Chemistry, and the Extractive Arts.**
- 1 Holmes, Joseph E., Payton, Walter, and Taylor, Fenner, B., London.—Coal and rock-cutting machine; cylinder engine; rock-boring machines; revolving steam engine and air compressor. 500
- 2 Baird, William, & Co., Gartsherrie Iron Works, Coatbridge, Scotland.—Coal-cutting machine. 500
- 3 Hurd, Frederick, & Co., Wakefield.—Coal-cutting machine; ratchet wedge shovel; air compressor. 500
- 4 Macdermott, Martin, London.—Rock and coal perforators; machines for undercutting coal; screw wedge for breaking down coal. 500
- 5 Hardy Patent Pick Co. (Limited), Sheffield.—Implements for coal, ironstone, gold, and silver mining, for quarrying and excavating; cast steel picks. 502
- 6 Cooke, Joseph, & Co., Midland Davy Lamp Works, Birmingham.—Miners safety lamps. 502
- 7 Bainbridge, Emerson, Duke of Norfolk's Collieries, Sheffield.—Miners' safety lamp. 502
- 8 Pickering, Jonathan, Globe Works, Stockton-on-Tees.—Pulley blocks; hoists; steam and water cylinder; steam pump. 503
- 9 The Dunston Engine Works Co., Gateshead-on-Tyne, Durham.—Stone breaker; combined stone breaker and bone cutter. 505
- 10 Kimberley, Nathan Gold, London.—Centrifugal pulverizing mills. 505
- 11 Siemens, Charles William, London.—Models of furnaces for metallurgical operations, glass melting, etc. 506
- 12 Smith, Dillwyn, Liverpool.—Mechanical stokers and fire bars. 506
- 13 Sugg, William, Vincent Works, London.—Gas burners; a new illuminating power meter. 509
- Machines and Tools for working Metal, Wood, and Stone.**
- 14 Roberts, William, Bootle, near Liverpool.—Self-acting painting machine for venetian blinds, laths, hoop iron, etc. 510
- 15 Massey, B., & S., Openshaw, Manchester.—Steam hammers; steam stamps; circular saw for cutting hot iron and steel; models of steam hammers; samples of forgings. 511
- 16 Wright, Peter, & Sons, Constitution Hill Works, Dudley, Worcestershire.—Anvils; vises; tools of various kinds; hammers. 514
- 17 Brooks & Cooper, Mousehole Forge, Sheffield.—Anvils, vises, hammers, shear steel, etc. 514
- 18 Beesley & Sons, Abbey Road Boiler Works, Barrow-in-Furness.—Punching, shearing, and angle-cropping machine for iron, steel, or other metals. 515
- 19 Heap, Joshua, & Co. (Limited), Oldham.—Tools and machines, taps, hobs, pipe; bolt-screwing and nut-tapping machines. 515
- 20 Nussey & Leachman, Leeds.—Hydraulic pressing machine; hydraulic punching, shearing, and riveting machine. 515
- 21 Shearer, Hugh, London.—Machine for dressing stone. 516
- 22 Lavers, Alfred Hamilton, London.—Testing machine to show strength of cement. 517
- Machines and Implements of Spinning, Weaving, Felting, and Paper Making.**
- 23 Fleming, Thomas, & Son, West Grove Mill, Halifax.—Card clothing for carding machines, etc.; needle-point teeth. 520
- 24 Ambler, William, Bradford, Yorkshire.—Machine for making paper cop tubes used in spinning; machine for cleaning the teeth of wheel castings. 520
- 25 Mackenzie, Duncan, London.—Self-acting reader for the Jacquard loom. 520
- 26 Ingham, John, & Sons, Croft Head Works, Thornton, near Bradford.—Case of shuttles, etc., for weaving; tacking, shuttle pikes, stocks, and bowls for weaving. 520
- 27 Platt Bros., & Co. (Limited), Hartford Works, Oldham, Lancashire.—Cotton gin. 521
- 28 Gadd, Thomas, Manchester.—Printing machine for large size garment rollers, angular engine; combined engraving and punching machine; setting-out table, with micrometer; combined varnishing and ruling machine; machine for setting out; ruling machine, clamps, engravers' block, and lathe. 521
- 29 Lancaster, William, Willow Iron Works, Accrington, Lancashire.—Yarn-sizing dressing machine; self-stopping beaming machines; loom. 521
- 30 Booth, H., & Co., Preston, Lancashire.—Cotton-spinning machinery. 521

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ALL WORK

Accurately Fitted
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AND

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THE SYSTEM of governing the business of the Company is perfect.

THE COMFORT AND CONVENIENCE of travelers are paramount considerations.

FRANK THOMSON,
General Manager.

D. M. BOYD, Jr.,
General Passenger Agent.

Cloth and Paper-Working Machines, Motors and Appliances.

- Motors and Apparatus for the Generation and Transmission of Power.**
- 31 Carter, John, Halifax, Yorkshire.—** Spinning frame. 521
- 32 Coats, J., & P., Ferguslie Thread Works, Paisley.—** Spooling machine; thread-winding machine; machine for ticketing. 521
- 33 Gimson & Coltman, Leicester.—** Rib top machine; circular machines. 521
- 34 Gimson & Coltman, Leicester.—** Knitting machines. 522
- 35 Smith, John, & Samuel, Low Bridge Works, Keighley, Yorkshire.—** Engineers' and machinists' tools and worsted machinery. 522
- 36 Lawson, Samuel, & Sons, Hope Foundry, Leeds.—** Machinery for carding, preparing, and spinning jute; cop-winding machine. 524
- 37 Fairbairn, Kennedy, & Naylor, Leeds.—** Machinery for preparing and spinning jute, hemp, flax, tow, and similar fibres. Carding engine; drawing, roving, and spinning frames. 524
- 38 Marshall, T. J., & Co., Campbell Works, Kingsland.—** Dandy rolls and wire cloth, for paper making, and pulp strainer. 525
- Machines, Apparatus, and Implements used in Sewing and Making Clothing and Ornamental Objects.**
- 39 Smith & Starley, Trafalgar Works, Coventry.—** Sewing machines; needles and attachments; stocking-darning machines; button-hole sewing machines; automatic work holders; electric motors; bicycles and suspended wheels. 531
- 40 Newton, Wilson, & Co., London.—** Sewing machines, their appliances and apparatus. 531
- 41 Kimball & Morton, Anderston.—** Sewing machines. 531
- 42 Greenwood & Batley, Albion Works, Leeds.—** Bolt-forging machines; machine for tying in warps for looms; printing machine. 531
- 43 Sanson, Robert Bell, London.—** Spring arm endless band knife; cloth-cutting machine; parallel pressing machine for tailors' use. 531
- 44 Air Burning Co. (Limited), Glasgow.—** Ironing table. 534
- 45 Broadbent, Thomas, Chapel Hill, Huddersfield.—** Hydro extractor, for extracting water from wool, cotton, etc. 534
- Machines and Apparatus for Typesetting, Printing, Stamping, Embossing, and for Making Books, and Paper Working.**
- 46 Beatty, Francis S., Dublin.—** Lithographers' manifold transfer machines, for the reproduction of printed matter of enlarged or reduced dimensions from that of the original. 540
- 47 Lilly, John, & Co., London.—** Perfecting and single cylinder printing presses. 540
- 48 Walter, John, London.—** Printing press. 540
- 49 Shaw, William, London.—** Logotypes and cases, shown in operation; printing press. 540
- Motors and Apparatus for the Generation and Transmission of Power.**
- 50 Green, Edward, & Son, Manchester.—** Fuel economizer for heating the feed water for steam boilers. 550
- 51 Davey, Paxman, & Co., Colchester, Essex.—** Portable steam engine; vertical boiler and engine; steam corn dryer; water heater. 550
- 52 Galloway, W., & J., & Sons, Knott Mill Iron Works, Manchester.—** Steel boilers, for use in the British section. 550
- 53 Moy, Thomas, London.—** Small steam engines for tramways, etc. 550
- 54 Ransomes, Sims, & Head, Orwell Works, Ipswich.—** Portable steam engines, with apparatus for burning straw, reeds, sticks, etc. 550
- 55 Wright, William, Vulcan Foundry, Coalbridge.—** Hot water boilers for heating dwellings, conservatories, etc. 550
- 56 Moncrieff, John, North British Glass Works, Perth, Scotland.—** Steam boiler water gauge glasses. 551
- 57 Wier, Marshall Arthur, London.—** Pneumatic motor, water meter, hydro-gyrometer, locomotive speed indicator, pneumatic gyrometer, reciprocating counter. 551
- 58 Thermo Electric Generator Co. (Limited), London.—** Thermo batteries worked by gas, charcoal, or coke, in nature approaching the appearance of a gas stove. 552
- 59 Turner, Charles, Southampton.—** Couplings for propeller shafts and other purposes. 553
- 60 Hewitt, William, Bristol.—** Models of improved screw propellers; model of an improved principle for driving machinery; gun carriage; breech-loader gun. 553
- 61 Vansittart, Henrietta, Mrs., Twickenham.—** Screw propeller. 554
- 62 Browne, John Collis, London.—** Working model of steamship and patent propeller. 554
- 63 Moncrieff, John, North British Glass Works, Perth.—** Gauge glasses for indicating height of water in steam boilers. 555
- Hydraulic and Pneumatic Apparatus, Pumping, Hoisting, and Lifting.**
- 64 Gwynne, John, & Henry, Hamersmith Iron Works, London.—** Models of compound surface condensing engines. 560
- 65 Gwynne & Co., London.—** Centrifugal pumps and engines; gas exhauster and engine. 560
- 66 Ellis, William Irlam, Manchester.—** Blower or exhauster for air or gas. 562
- 67 Appleby Brothers, London.—** Steam cranes. 563
- 68 Wallace & Tucker, Belfast.—** Fire annihilator. Model of turret system of life preservation in case of shipwreck. 564
- 69 Haynes, Thomas, & Sons, London.—** Platform pump; garden syringe; water bringer, for overcoming friction caused by drawing water through long lengths of hose; self-acting hose collier. 564

MACHINERY.

Agricultural Machines, Railway Plant, Marine Appliances.

- Railway Plant, Rolling Stock, and Apparatus.**
- 70 Needham & Kite, Phoenix Iron Works, London.—High pressure filter press. 565
- 71 Lawrence & Co., London.—Refrigerators; mashing machines, spargers, etc. 565
- 72 Dennis, T. H. P., & Co., Anchor Iron Works, Clemsford.—High pressure valves for steam, hot or cold water, or gas. 566
- 73 Welch, Alfred, London.—Railway cattle wagons. 571
- 74 Williams, Richard Price, London.—Continuous railway crossings; switches for doing away with facing points on railways. 574
- 75 Brierley, Sons, & Reynolds, London.—Railway signal model of railway junction. 574
- 76 Seaton, William, London.—Saddle rail and permanent way construction. 574
- 77 Saxby & Farmer, London.—Railway signals; models of railway switches; junction, with switches and signals; railway level crossing gates. 574
- Machines used in preparing Agricultural Products.**
- 78 Sutcliffe, James S., Bacup, Lancashire.—Middlings flour separator. 580
- 79 Mirlees, Tait, & Watson, Glasgow.—Machinery in motion, consisting of sugar mills, valveless engine working an air pump for a vacuum pan, and driving centrifugal machines. 581
- 80 Collier, Luke, Rochdale.—Confettioners' machines. 582
- 81 Andrew, J. E. H., Stockport.—Machines for spinning tobacco; samples of twist tobacco from Europe. 584
- Aerial, Pneumatic, and Water Transportation.**
- 82 Siebe & Gorman, London.—Diving apparatus for two divers; figure of diver in diving suit, with the helmet and speaking apparatus. 594
- 83 Cruickshank, A. B., Dundee, Scotland.—Self-acting safety cleats for boats and yachts. 594
- 84 Logan, John Maxwell, Cambridge.—Model of four-oared racing boat, to take to pieces for convenience in traveling. 594
- 85 Inman Steamship Company (Limited), Liverpool.—Full rigged model and oil painting of the steamer "City of Berlin." 594
- 86 Hill & Clark, London.—Boat disengaging hooks. 594
- 87 Clark, Standfield, & Co., London.—Models of floating and gridiron depositing docks. 596
- 88 Roby, George, Wigan.—Hydro-pneumatic and other vessels for the storage of gunpowder, etc. 596
- 89 Bradford, William Henry, Great Saughall, near Chester.—Model of life boats; lateen rig; life or salvage boat; model of a ship's course indicator. 597
- 90 Wood, John William, Harwich, Essex.—Iron self-adjusting shot hole, rivet hole, and leak stopper. 597
- 91 Martin, Claude, London.—Self-canting anchors; chain cables; model of H. M.'s turreted ram "Alexandra." 597
- 92 Gumpel, Charles Godfrey, London.—Ship's rudder. 597

CANADA.

(Central Aisle, Columns 1 to 7.)

Metallurgical, Chemical, Wood-Working Machines.

Machines, Tools, and Apparatus of Mining, Metallurgy, Chemistry, and the Extractive Arts.

- 1 Hannahan, Joseph, Ottawa, Ont.—Rock-drilling bits. 500
- 2 Larue, H., Quebec, Q.—Magnetic separator. 505
- 3 Lymans, W. S., & Co., Halifax, N.S.—Gold quartz crushing machine. 505
- 4 Freeland, R., Toronto, Ont.—Soap-making machinery. 508
- 5 Ruthen, J., Ottawa, Ont.—Gas machine. 509
- 6 Cassegrain, H. Ed., Quebec, Q.—Gas machine. 509

Machines and Tools for Working Metal, Wood, and Stone.

- 7 McEachern, J. D., Harriston, Ont.—Barrel-making machine. 510
- 8 Gourley, C., & Co., Galt, Ont.—Sash and moulding machine, dove-tenoning machine, rotary bed planer. 510
- 9 Kennedy, W., & Son, Owen Sound, Ont.—Facing and jointing planer. 510
- 10 Tomlinson, Smith, & Co., Goderich, Ont.—Barrel-making machine. 510
- 11 Machine Co., Bowmanville, Ont.—Turning lathe for wood, moulding machine, planing and notching machine. 510

Wood, Metal, Cloth, Paper-Working Machines.

- 12 Westman, W. D., Toronto, Ont.—Foot circular saw and boring machine.** 510
- 13 Abercrombie, W., Hamilton, Ont.—Relishing and mortising machine, sash clamp.** 510
- 14 Waterous Eng. Works Co., Brantford, Ont.—Portable saw mill.** 510
- 15 Mitchell & Taple, Harriston, Ont.—Wood-sawing machine.** 510
- 16 Hamilton Tool Co., Hamilton, Ont.—Bend-sawing machine.** 510
- 17 Gilbertson, W., Beaverton, Ont.—Sawing machine.** 510
- 18 McKecknie & Bertram, Dundas, Ont.—Wood-moulding machine.** 510
- 19 Smark, J., Brockville, Ont.—Bowling and mortising machine.** 510
- 20 Harris, James, & Co., St. John, N. B.
a Shingle machine.** 510
b Register grates. 513
- 21 Lordly, Howe, & Co., St. John, N. B.—Turning lathe.** 510
- 22 Nelson, Thomas, & Co., Dundas, Ont.—Cast iron water pipe.** 513
- 23 Campbell, George, Toronto, Ont.—Portable saw forges.** 514
- 24 Tool and Machine Co., Dundas, Ont.—Arm-drilling machine, shaping and slotting machines.** 515
- 25 Hinchliffe, R., Hamilton, Ont.—Screwing apparatus, test plates, screw-cutting lathes.** 515
- 26 McKecknie & Bertrand, Dundas, Ont.—Iron turning lathes, radial drill, slotting and iron shaping machines.** 515
- 27 Tool Co., Hamilton, Ont.—Engine lathe, bolt cutter, drilling machine, portable radial drill, steam hammer.** 515
- 28 Machine Co., Bowmanville, Ont.—Metal turning lathe, planing machine.** 515
- 29 Stephenson, M., Stratford, Ont.—Hand drilling machine.** 515
- 30 Smark, J., Brockville, Ont.—Drilling machines.** 515
- 31 Fisher, J., & Co., Kincardine, Ont.—Clipping boiler plate machine.** 515
- 32 Mitchell, R., & Co., Montreal, Q.—Lead tube bending machine.** 515
- 33 Dunn, P., Cote St. Paul, Q.—Wire nail machine.** 515
- 34 McFarlane, Thum, & Co., Fredericton, N. B.—Vertical power drill.** 515
- 35 Coore, E. R. N., & Co., St. John, N. B.—Nail machine.** 515
- 36 Myers, S., & Son, St. John, N. B.—Small drill.** 515
- 37 Bulmer & Sheppard, Montreal, Q.—Brick machine.** 517
- Machines and Implements of Spinning, Weaving, Felting, and Paper Making.**
- 38 Powers, S. H., Woodstock, N. B.—Self-acting hand loom.** 521
- 39 Becker, A., Montreal, Q.—Sample of card clothing.** 522
- 40 Boeck, Chs., Toronto, Ont.—Combining machines for brush makers.** 524
- Machines, Apparatus, and Implements used in Sewing and Making Clothing and Ornamental Objects.**
- 41 Piper, Thos., Hamilton, Ont.—Sewing machine.** 531
- 42 Raymond, Guelph, Ont.—Sewing machines.** 531
- 43 Gardner Sewing Machine Co., Hamilton, Ont.—Sewing machines.** 531
- 44 Wilkie & Osborne, Guelph, Ont.—Sewing machines.** 531
- 45 Wanzer & Co., Hamilton, Ont.—Sewing machines.** 531
- 46 Canada Sewing Machine Co., Hamilton, Ont.—Sewing machines.** 531
- 47 Aurtheras, Jas., Toronto, Ont.—Sewing machines.** 531
- 48 St. Amand, O., Quebec, Q.—Sewing machine.** 531
- 49 Lawlor, J. D., Montreal, Q.—Sewing machines.** 531
- 50 Morrill, O., & Co., Rock Island, Q.—Sewing machine.** 531
- 51 Williams (C. W.) Manufacturing Co., Montreal, Q.—Sewing machines.** 531
- 52 Harris, Th., Montreal, Q.—Sewing machine needle sharpener.** 531
- 53 Wells & Gillespie, Toronto, Ont.—Reversible heel plates, boot and shoe stretcher.** 532
- 54 Pettener, B. J., Montreal, Q.—Heel-burnishing machine, edge trimmer, heel trimmer, rolling machine, boot-crimping brake, boot seam rubber, boot tree, counter skiver, top punch, shoe fitting, and iron buffering machines.** 533
- 55 Popham, E., Montreal, Q.—Steam peg breaker.** 533
- 56 Clarke, R., St. John, N. B.—Lasts.** 533
- Machines and Apparatus for Type Setting, Printing, Stamping, Embossing, and for making Books, and Paper Working.**
- 57 Fleming, John, Toronto, Ont.—Electrotyping machine.** 541
- 58 Drummond, Geo. P., Ottawa, Ont.—Type-setting and distributing machine.** 542
- 59 Dominion Type Foundry, Montreal, Q.—Types.** 542
- 60 Burland, Desbarats, & Co., Montreal, Q.—Stereotyping, electrotyping.** 542
- 61 Samson, Chs., Fredericton, N. B.—Printing stand.** 543
- Motors and Apparatus for the Generation and Transmission of Power.**
- 62 Tandy, G. J., Kingston, Ont.—Steam boiler.** 550
- 63 McKay, Adam, Dartmouth, N. S.—Model steam boiler.** 550
- 64 Kennedy, Wm., & Sons, Owen Sound, Ont.—Water wheel.** 551
- 65 Tuerk, F. W., Berlin, Ont.—Working model water wheel.** 551

MACHINERY.

Motors, Hydraulic Apparatus, Railway Plant.

66 Barber & Harris, Meaford, Ont.—		
Water wheel.	551	
67 Goldie & McCulloch, Galt, Ont.		
^a Turbine water wheel.	552	
^b Steam engine.	552	
68 McMarti, J. A., Montreal, Q.—		
Hydraulic motor.	552	
69 Harris, J., & Co., St. John, N. B.—		
Water wheel.	552	
70 Fleck, A., Ottawa, Ont.—		
Oscillating steam engine.	552	
71 White, Yate, & Co., London, Ont.—		
Steam engine.	552	
72 Martin, Chas., Belleville, Ont.—		
Vertical steam engine.	552	
73 Beck, Geo. & W., Baden, Ont.—		
Small steam engine.	552	
74 Levy, Chas., & Co., Toronto, Ont.—		
Steam engine.	552	
75 Piper, Thos., Hamilton, Ont.—		
Model four-cylinder engine.	552	
76 Wilson, Th., & Co., Dundas, Ont.—		
Steam engine.	552	
77 Brush, Geo., Montreal, Q.—		
Steam engine.	552	
78 Gilbert, E. E., Montreal, Q.—		
High speed steam engine.	552	
79 Gardner, R., & Sons, Montreal, Q.—		
Steam engine.	552	
80 Gilbert, E. E., Montreal, Q.—		
Atmospheric gas engine.	552	
81 Bartley, W. P., Montreal, Q.—		
Steam engine.	552	
82 Tyzick, James, St. John, N. B.—		
Motor.	552	
83 Fleming, Geo., & Sons, St. John, N. B.—		
Oscillating engine.	552	
84 Gibson, F. J., Halifax, N. S.—		
Rotary engine.	552	
85 Smith, J. G., Dartmouth, N. S.—		
Minature steam engine.	552	
86 Dixon, Smith, & Co., Toronto, Ont.—		
Belting.	553	
87 Campbell, L. J., & Co., Montreal, Q.—		
Belting.	553	
88 Hardman, J. L., & Co., Montreal, Q.—		
Belting.	553	
89 Murphy, Lymans, & Co., St. John, N. B.—		
Light and loose pulley.	553	
90 Nelson, Thomas, & Co., Dundas, Ont.—		
Screw propeller wheel.	554	
91 McKeough, J. W., Chatham, Ont.—		
Brass dome.	555	
92 Morrison, James, Toronto, Ont.—		
Steam, vacuum, hydraulic gauges.	555	
93 Piper, Thos., Hamilton, Ont.—		
Steam boiler detector gauge.	555	
94 Myers, S., & Son, St. John, N. B.—		
Governor.	555	
 Hydraulic and Pneumatic Apparatus, Pumping, Hoisting, and Lifting.		
95 Patrick, Rob., Galt, Ont.—		
Rotary pump.	560	
96 Cox, H. W., Peterborough, Ont.—		
Rotary force pumps.	560	
97 Oakville Manufacturing Co., Oakville, Ont.—		
Force, well, and cistern pumps.	560	
98 Mills, C. P., Ste. Catherine, Ont.—		
Iron pumps.	560	
99 Clark, A. B., Ont.—		
Pump.	560	
100 Bowes, E., & Son, Stratford, Ont.—		
Force pumps.	560	
101 Webster, Stephen, St. Catherines, Ont.—		
Oil-storing tank.	560	
102 Smark, J., Brockville, Ont.		
^a Cistern, well, and force pump.	560	
^b Jack screws.	563	
103 Clark, C. W., Dundas, Ont.—		
Well pump.	560	
104 McMarti, J. A., Montreal, Q.—		
Pump.	560	
105 Burns, C. C., St. John, N. B.—		
Rotary pump.	560	
106 Jones, C. C., Fredericton, N. B.—		
Barrel pump.	560	
107 Wilson, Clarke, & Co., Yarmouth, N. S.—		
Ship pump.	560	
108 Myers, S., & Son, St. John, N. B.—		
Blower.	560	
109 Fenson, S., Toronto, Ont.—		
Hydraulic elevator.	563	
110 McMarti, J. A., Montreal, Q.—		
Hydraulic meter.	563	
111 Small & Fisher, Woodstock, N. B.—		
Barrel lifter.		
112 Dailey, M. E., Ottawa, Ont.—		
Telescope trestle.		
113 Ronald, John D., Chatham, Ont.—		
Steam fire engine, hose cart and hose.	564	
114 Fire Extinguisher Manufacturing Co., Toronto, Ont.—		
Stationary engine.	564	
115 Chatterton, R. D., Cobourg, Ont.—		
Ladder fire escape.	564	
116 Prowse Bros., Montreal, Q.—		
Fire extinguisher.	564	
117 Murphy & Harle, Montreal, Q.—		
Pneumatic fire extinguisher.	564	
118 Buttin, Robert, St. John, N. B.—		
Fire escape.	564	
119 Smith, H. F., Toronto, Ont.—		
Soda water fountain.	565	
120 Sells, H., Vienna, Ont.—		
Cider mill and press.	565	
121 Brazil, P., Barrie, Ont.—		
Cider mill and press.	565	
122 Date, John, Montreal, Q.—		
Diving apparatus.	567	
123 Pitts, D. H., Halifax, N. S.—		
Submarine armor.	567	
 Railway Plant, Rolling Stock, and Apparatus.		
124 Meyer, F. W. A., Montreal, Q.—		
Drawing of engine and tender.	570	
125 Chatterton, R. D., Cobourg, Ont.		
^a Railway collision springs.	571	
^b Self-acting coupler.	572	
126 Jones & Burland, Montreal, Q.—		
Railway springs.	571	
127 Knott, Kennard, Petersville, L., Ont.—		
Cattle car and refrigerating tender.	571	
128 Peters, H. J., Quebec, Q.—		
Dumping car.	571	

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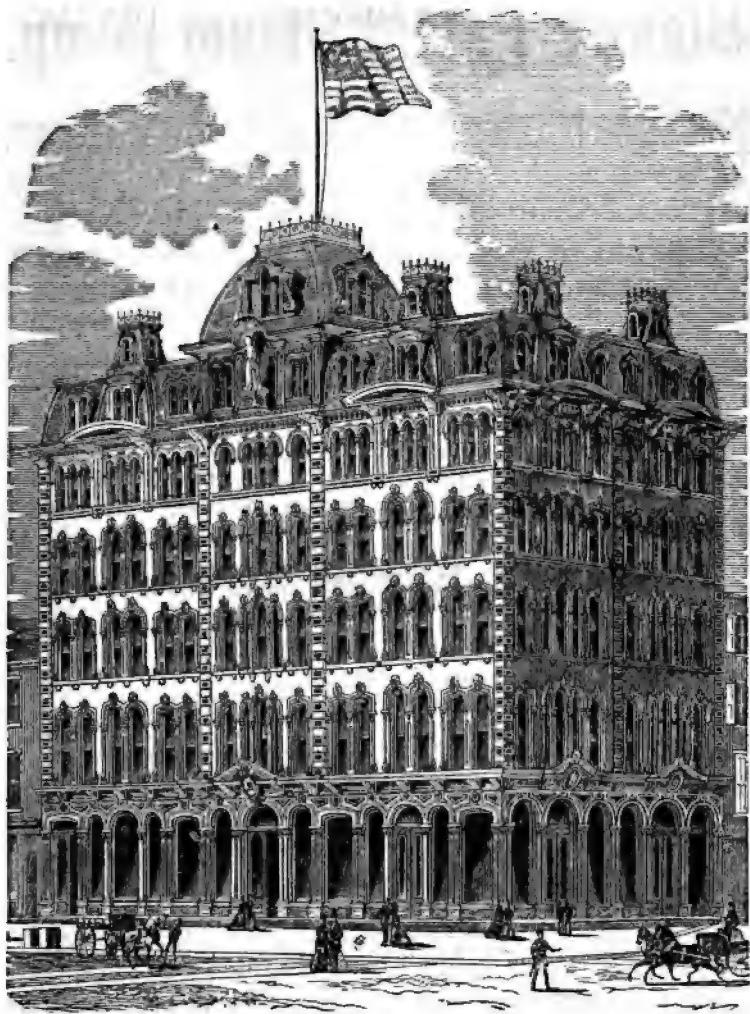
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Railway Plant, Agricultural Machines, Marine Models.

129 Wright, W., Oakville, Ont.—Car coupler.	572	159 Power, W., & Co., Kingston, Ont.—Ship models.	594
130 Cornell, S., Widden, Ont.		160 Lapierre, Zephirin, Isle of Orleans, Q.—Sailing boat rigged, rowing boat, winter canoe.	594
<i>a</i> Car coupling.	572		
<i>b</i> Rail joint protector.	574		
131 Gardner, R., & Son, Montreal, Q.—Brake machine.	572	161 Charland, J. B., Levis, Q.—Ship model.	594
132 Chisholm, R. N., Oakville, Ont.—Car coupling.	572	162 Valin, P. V., Quebec, Q.—Ship model.	594
133 Richard, E. O., & Brother, St. Roch, Q.—Car brakes and coupling.	572	163 Baldwin, P., St. Roch, Quebec, Q.—Ship model.	594
134 Car Wheel Co., Toronto, Ont.—Car wheels and axles.	573	164 Dunn & Samson, Levis, Q.—Ship models.	594
135 McDougall, J., & Co., Montreal, Q.—Car wheels and axles.	573	165 Rose, N., Levis, Q.—Ship models.	594
136 Harris, J., & Co., St. John, N. B.—Railroad car wheels and axles.	573	166 Dinning, H., Quebec, Q.—Ship models.	594
137 Von Staden, W. G., Strathroy, Ont.—Bent posts and rafters for railroad cars.	574	167 Marquis, F. H., Levis, Q.—Ship models.	594
138 Taylor, R., Guelph, Ont.—Rail joint and nut lock.	574	168 Auger, E., Quebec, Q.—Ship models.	594
139 Dunn, Wm., St. Mary's, Ont.—Safety switch.	574	169 Cotman, W., Quebec, Q.—Ship models.	594
140 Nunn, W. C., Belleville, Ont.—Railway telegraph signals, with revolving and fixed lamps, and electric gong.	575	170 Samson & Co., Quebec, Q.—Ship models.	594
141 Morris, J. W., Hamilton, Ont.—Movable railroad guide signals.	575	171 Gingras, E., Quebec, Q.—Ship models.	594
142 Brydon, R., Newbury, Ont.—Grain car.	576	172 Oliver, J., Quebec, Q.—Ship models.	594
143 Dunn, Wm., St. Mary's, Ont.—Safety car coupler.	576	173 Oliver, F. H., Quebec, Q.—Ship models.	594
144 Ramsay, R. U., Cobourg, Ont.—Self-acting truck reliever for cars.	576	174 Quebec Advisory Board, Quebec, Q.—Ship models.	594
145 Edgecomb, F. B., Fredericton, N. B.—Flanges.	576	175 Sewell, E. W., Levis, Q.—Winter canoe, drawings of safety ship, ship and yacht models.	594
146 Kennedy, E., St. John, N. B.—Locomotive ash pan cleaner.	576	176 Robitaille, Th., Quebec, Q.—Complete cod-fishing boat; "Micmac" bark canoe.	594
147 Hewkesurnt, D., Digby, N. S.—Spark arresters.	576	177 Charland, W., Levis, Q.—Ship model.	594
Machines used in Preparing Agricultural Products.			
148 Plate, Samuel, Goderich, Ont.—Cylindrical mill stones.	580	178 Grenier, Frs., Isle of Orleans, Q.—Pilot boat.	594
149 Copping, G. W., Toronto, Ont.—Lozenge machine.	582	179 Girard, A., Murray Bay, Q.—Poplar canoe.	594
150 Gardner, R., & Sons, Montreal, Q.—Cracker machine, mixing machine.	582	180 Hibblee, A. T., St. John, N. B.—Model dingle for pilot use.	594
151 Scalisi, Rob., Toronto, Ont.—Evaporator and tobacco lump machine.	584	181 Woodley, John, St. John, N. B.—Quarter boat.	594
152 Adams, J. L., Montreal, Q.—Tobacco cutter.	584	182 Ross, Elizabeth, Portland, N. B.—Single scull racing boat, spoon-set oars, set single scull oars, set oars, life boat model.	594
153 Marengo, J. & A., Montreal, Q.—Cigarette machine.	584	183 Barrill, Jos., Yarmouth, N. S.—Ship model, improved gear for reefing sail.	594
154 McKay, John, Dundas, Ont.—Pot and pearl barley machine.	584	184 Moreley, E., Dartmouth, N. S.—Ship models.	594
Aerial, Pneumatic, and Water Transportation.			
155 Herald, D., Gore's Landing, Ont.—Canoes.	594	185 Garmont, Wm.—Ship model.	594
156 English, W., Peterborough, Ont.—Hunting canoe.	594	186 Dailey, M. E., Ottawa, Ont.—Model ocean ship.	595
157 Lemons, John, Hamilton, Ont.—Model life boat.	594	187 Merritt, Abel, Chatham, Ont.—Propeller boat.	595
158 Marsh, P. C., Hamilton, Ont.—Fore and aft sail reefer.	594	188 Richelieu & Ontario Navigation Co., Montreal, Q.—Steamboat models.	595
		189 Wildgoose, F. H., Montreal, Q.—Steamboat model.	595

MACHINERY.

Marine Models and Appliances.

190 Meyer, F. W. A., Montreal, Q.—	Drawing longitudinal section steam-boat.	595	194 Pitts, D. H., Halifax, Ont.—Ship	windlass and cable brake.	597
191 Sewell, E. W., Levis, Q.—	Drawing of steamship for Canadian trade.	595	195 Mosler, Geo. J., Maitland Island, N.	B.—Ship wheel.	597
192 Beautey, H., Quebec, Q.—	Dragging or grappling apparatus.	596	196 Harris, James, & Co., St. John, N.	B.—Capstan.	597
193 Carroll, S., Widden, Ont.—	Marine compass, automatic ship trimmer.	597	197 Pitts, D. H., Halifax, N. S.—	Mast hoop clamp, cable brake, metal jib hank.	597
			198 Couvrette & Frigon, Montreal, Q.—	Stern of ship (model).	597

FRANCE.

(North of Central Aisle, Columns 1 to 7.)

Metal, Wood, Stone, Textile Machines.

Machines, Tools, and Apparatus of Mining, Metallurgy, Chemistry, and the Extractive Arts.

1 Fleury, Jules Martin, Paris.—	Grinding mill.	505
2 David Bros., Charleville (Ardennes).—	Portable forges.	506
3 Perret, Michel, Paris.—	Apparatus for combustion.	506
4 Goyard, F., Paris.—	Crucibles and furnaces.	506
5 Enfer, A., jr., Paris.—	Portable forges and bellows.	506
6 Enfer, Ernest, Paris.—	Portable forges; forges for the laboratory; gas pressure bellows apparatus; bellows.	506
7 Chenaillier, Paris.—	Universal evaporator.	506
8 Faure & Kessler, Clermont-Ferrand.—	Apparatus for the concentration of sulphuric acid.	508
9 Desmoutis, Quennessen, & Le Brun, Paris.—	Platina apparatus.	508
10 Pelouze, E., & Audouin P., Paris.—	Condenser for gas works.	509
11 Lascole, A., Paris.—	Gas apparatus.	509

Machines and Tools for Working Metal, Wood, and Stone.

12 Arbey, F., Paris.—	Wood-Working machinery.	510
13 Branche, H., Paris.—	Machines and tools.	510
14 Rous, Edmond, Paris.—	Tools of precision.	510
15 Dugoujon, Senior, Paris.—	Saws.	510
16 Deplanque, Son, Senior, Maison-Alfont (Seine).—	Emery millstones.	515
17 Limet-Lapareille & Co., Paris.—	Files.	515

18 La Quintinie, A., & Co., Paris.—	Machines and tools for goldsmiths; designs of machines for soap, confectionery, and matches.	515
19 Durrschmidt, Lyons.—	Emery millstones.	515
20 Durand, F., & Marais, Paris.—	Brick machines.	517

Machines and Implements of Spinning, Weaving, Felting, and Paper Making.

21 Guinet, Ant., & Co., Lyons.—	Silk-weaving looms.	520
22 Richard, J. S., Paris.—	Machines and looms for textiles.	521
23 Pierron & Dehaitre, Paris.—	Weaving machine.	522
24 Couture, Paris.—	Breaking Machine for textile fabrics.	523
25 Maigrou, F. A., Paris.—	Rope machine.	524
26 Deny, Louis, Paris.—	Open copper cylinder and refiner for paper manufacture.	525
27 Thomine, F., Paris.—	Machine for the manufacture of fishing nets.	527

Machines, Apparatus, and Implements used in Sewing and Making Clothing and Ornamental Objects.

28 Legat, D., Paris.—	Machine for sewing straw hats.	531
29 Cornely, E., Paris.—	Embroidering machines.	531

Machines and Apparatus for Type Setting, Printing, Stamping, Embossing, and for Making Books, and Paper Working.

30 Coblenz, Paris.—	Electrotypes.	541
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- 31** Derriey, Ch., Paris.—Typography, engraving, and electrotypes. 541
32 Lecerf, L., Paris.—Printing materials. 543
33 Tucker, Paris.—Types and cuts. 543
34 Vital, A., Paris.—Rollers for lithographic presses. 543
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35 Leroy, Francois, Marseilles.—Models of marine boilers. 550
36 Fontaine, Hippolyte, Paris.—Steam engines. 552
37 Electro-Magnetic Machine Manufacturing Co., Paris.—Gas machines, galvano-plastic machine, machine to transmit power. 552
38 Mignon & Rouart, Paris.—Noiseless gas motors. 552
39 Chauveau, Paris.—Steam engines. 552
40 Breguet, Paris.—Electro-Magnetic machines. 552
41 Rous, Edmond, Paris.—Hermetic clasps for oil cups, etc. 553
42 Welby, Rouen.—Belting. 553
43 Jacob, Ch. Moise, Paris.—Oiling cushions. 553
44 Domange, Lemierre, & Co., Paris.—Belting. 553
45 Perreaux, L. G., Paris.—Screw propeller. 554
46 Dechamp, C., Lyons.—Safety boiler apparatus. 555
47 Cazaubon, Dominique, Paris.—Cocks for steam, water, and gas pumps, and water closets. 555
48 Lion & Guichard, Paris.—Metallic manometer. 555
49 Macabies, Paris.—Automatic feeder. 555
50 Rigolot, Paris.—Cocks for water, steam, and gas. 555
51 Cuau, Paris.—Boiler injector. 555
52 Coux des Roseaux, Asnieres, near Paris.—Automatic oil cups for steam machines; fire-proof insulator for steam pipes. 555
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53 Neut, L., & Dumont, L., Paris.—Centrifugal pumps. 560
54 Garlaudat, Paris.—Refrigerating apparatus. 562
55 Enfer, A., jr., Paris.—Portable forges and bellows. 562
56 David Bros., Charleville (Ardennes).—Portable forges. 562
57 Enfer, Ernest, Paris.—Portable forges, bellows, gas apparatus. 562
58 Morane, jr., Paris.—Hydraulic press for candle manufacture. 563
59 Chrétien, J., Paris.—Automatic apparatus for unloading coal. 563
60 Rous, Edmond, Paris.—Pulleys and tackles. 563
61 Mégy, Echeverria, & Bazan, Paris.—Elevators, regulators, etc. 563
62 Gaußart, Epernay (Marne).—Machines for charging wines with gas. 564
63 Constant, Port-a-Binson (Marne).—Wine press. 565
64 Appert-Mandart, Reims (Marne).—Hooks and clasps for champagne. 565
65 Lejeune, Epernay (Marne).—Machine for charging wines with gas. 565
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69 Freal, Epernay (Marne).—Bottling machines. 565
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71 Guéret Bros., Paris.—Soda water machine. 565
72 Logette, Ay (Marne).—Clasps for bottles and machines for applying. 565
73 Maldine, H., Paris.—Soda water machines, siphons. 565
74 Maurice, Widow, & Guenin, Epernay (Marne).—Bottling machines. 565
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78 Mestre, A. de, Bordeaux.—Bottling machines. 565
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82 Fisse-Thirion, & Co., Reims.—Bottling machine. 565
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86 Carré, E., Paris.—Ice machine. 568
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88 Joliot, S., Vincennes.—Carbrakes. 572
89 Le Bas, Paris.—Automatic clutch. 572
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91 Brunon Bros., Rive-de-Gier (Loire).—Wheels manufactured by hydraulic pressure. 573
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94 Beyer Bros., Paris.—Soap and chocolate machines.	582	Aerial, Pneumatic, and Water Transportation.	
95 Hermann, G., Paris.—Chocolate machines.	582	98 General Transatlantic Company, Paris.—Model of the steamship "Periere."	595
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2 Wünschmann, Reinh., Leipsic.—Candle-making machine. 508

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- 3** Kahlike & Detlasssen, Hamburg.—Machinery. 510
4 Schlickeysen, C., Berlin.—Machinery of various kinds. 517
5 Loeff, Paul, Berlin.—Model of a stove. 517

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- 6** Windmüller & Meynen, Zwischenahn (Gr. Duchy of Oldenburg).—Wooden spools. 520
7 Schimmel, Oscar, & Co., Chemnitz.—Spinning machine. 521
8 Grothe, H., Berlin.—Model of a machine for removing the threads from the cottinge carders. 521
9 Mittweida Carder Factory, Mittweida, Saxony.—Carders. 522
10 Beuthner, Gebr, Berlin.—Carders. 522

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- 11** Bellé, R., Aix-la-Chapelle.—Needles. 530
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13 Lammertz, Leo., Aix-la-Chapelle.—Needles. 530
14 Neuss, H. F., Aix-la-Chapelle.—Needles. 530
15 Pastor, Ph. H., Sons, Burtscheid, near Aix-la-Chapelle.—Needles. 530
16 Zimmermann, Jos., Aix-la-Chapelle.—Needles. 530

- 17** German Sewing Machine Factory, formerly Jos. Wertheim, Frankfort-on-Main.—Sewing machines. 531

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- 18** Müller, Cl., Dresden.
19 Kiehle, R., Leipsic.
20 Hamburg-American Sewing Machine Factory Joint Stock Company.—Sewing machines, etc. 531
21 Schmalz, F. G., Altenburg.—Machines for making gloves. 532
22 Hemmer, L. Ph., Aix-la-Chapelle.—Fulling and washing machine. 534
23 Dausch, J. G., Munich.—Watchmakers' tools. 535
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- 25** Schmiers, Werner, & Stein, Leipsic.—Fast presses. 540
26 Traiser, Carl, Darmstadt.—Ruling machine. 541
27 Lotz, Ferd., Offenbach-on-Main.—Lithographic machinery. 543

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- 28** Blancke, Em. A. R., Frankfort-on-Oder.—India rubber and armatures. 550
29 Schilling, F. A., Bremerhaven.—Steam engines. 552
30 Gas Motor Factory, Deutz.—Gas motors. 552
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32 Bodemer, Georg, Zschopau, near Chemnitz.—Regulators. 555
33 Schäffer & Budenberg, Buckau, near Magdeburg.—Manometer. 555
34 Osenbrück & Co., Hethelingen, near Bremen.—Rotary lubricators. 555

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Hydraulic, Pneumatic Apparatus, Railway Plant.

35 Gehrckens, C. Otto, Hamburg.—Stuffing boxes.	555	Railway Plant, Rolling Stock, etc.	
36 Wertheim, Louis, Bornheim, near Frankfort-on-Main.—Steam packing.	555	42 Glöckner Bros., Tschirndorf, near Halbau.—Blocks for brakes.	572
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37 Alléoud, Emanuel, Metz.—Siphon pumps.	560	Aerial, Pneumatic, and Water Transportation.	
38 Weyhe, Wilh., Bremen.—Rotary pumps.	560	44 Dücker, Baron F. F. von, Bückeburg.—Drawing of a wire-rope railway.	590
39 Royal Saxon Fire Extinguisher Co., Leipzig.—Fire extinguishing apparatus.	564	45 Cordes, H. G., Bremerhaven.—Gun for saving shipwrecked persons.	594
40 Schultz, Ernst, Aschaffenburg.—Atmospheric apparatus.	564	46 Hamburg-American Joint Stock Steamship Co., Hamburg.—Model of a mail steamship.	595
41 Gassen, J. B., Coblenz.—Gauge.	566		

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2 Noback Bros. & Fritz, Prague.—Models and apparatus for arrangement of breweries and malt-houses.	568

Machines and Implements of Spinning, Weaving, etc.

3 Schram, Willibald, Vienna.—Jacquard machines.	521
4 Surber, I. Jacques, Vienna.—Weavers' reeds.	527

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5 Hock & Co., Julius, Vienna.—Petroleum and steam engines and boilers.	550
6 Popper, Joseph and David, Vienna.—Patent boiler incrustation preserver, boiler fittings.	595

Railway Plant, Rolling Stock, etc.

7 Tagleicht, Karl, Vienna.—Locomotive spark guard.	575
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Machinery used in Preparing Agricultural Products.

8 Vojtěchovsky & Resnick, Prague.—Machines for candy production.	582
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1 Suizer Brothers, Winterthur, Ct. Zurich.—Model of a new system of reversing gear for valve engines.	555
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Machines pertaining to Watchmaking are exhibited in Swiss Section, Main Building, and catalogued in Volume 1.

Railway Plant, Rolling Stock, etc.

2 Swiss Manufacturing Co., Neuhausen, near Schaffhausen.—Model of an apparatus for heating railway carriages.	571
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BELGIUM.

(South of North Aisle, Columns 6 to 17.)

Metal, Wood, Cloth-Working Machines, Motors.

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- 1 Dubois, Wm. & Francis Joseph, Seraing, near Liège.—Drilling machine for mines, tunnels, etc. 500
- 2 Chaudron, Joseph, Brussels.—Models and plans of shafts sunk in Belgium. 501
- 3 Libotte, Nicholas, Gilly, near Charleroi.—Cages with system of parachute, wagons with overthrowers. 502
- 4 Muller & Co., Clermont, near Liège.—Safety wicks for miners. 502
- 5 Sonheur, Arnold, Seraing, near Liège.—Safety lamps for fire-damp mines. 502
- 6 Van Flaecht, Emile, Haeren, near Brussels.—Models of fat-rendering works, with samples of stearine and oleine. 503

Machines and Tools for Working Metal, Wood, and Stone.

- 7 De Tombay, Auguste, Marcinelle, near Charleroi.
- 8 Model of a trip-hammer. 514
- 8 Model of steam shears. 515
- 9 Jullien & Jennar, Bomereé, near Charleroi.—Vise, blast-pipe, axle. 514
- 9 Nicaise, Ch., & Co., and Gobert, Aug., La Louvière.—Machinery for making bolts. 516

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- 10 Béde & Co., Verviers.—Wool cleaning machine. 522
- 11 Delrez, Félix, Verviers.—Cards. 522
- 12 Dethiou, Gilles, & Co., Verviers.—Cards. 522
- 13 Horstmans Brothers, Liège.—Cards.
- 14 Martin, Célestin, Verviers.—Looms, mechanical winder, cards. 522
- 15 Martin, Th. J., Pisseroule-Dison, near Verviers.—Cards. 522

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- 16 Turner, B. B., & Co., Brussels.—
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- 17 Joint Stock Society for the Manufacture of Machines and Tools of Precision, Saint Josse-ten-Noode.—Screwing, sewing, and knitting machines. 531

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- 18 Derkx-Schlopfer, I. F., Anderlecht, near Brussels.—Wooden printing types 542

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- 19 Van den Kerchove, P., Ghent.—Coriolis engines and Rider machine. 552
- 20 Dolne, L., & Co., Verviers.—Belting. 553
- 21 Horstmans Bros., Liège.—Belting. 553
- 22 Verat-Spelmans, Brichot, Ant., & Co., Brussels.—Belting. 553
- 23 Dervaux, Alfred, Brussels.—Feeding apparatus for boilers. 555

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- 24 Moreau, Léon, Brussels.—Fire-engine, pumps. 560

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- 25 Durieux & Co., Louvain.—Wheels for cars, carriages, etc. 573
- 26 Mabille, Valière, Mariemont.—Railway stock. 573
- 27 Legrand, Achille, Hyon, near Mons.—Sleepers and cushions for mining railway. 573
- 28 Léonard, F. L. J., Fayt, near Senneffe.—Railway brake, signals and gates, and ovens. 575

NETHERLANDS.

Machines and Motors.

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- 1 Haverkamp, Begemann, Helmond.—Gutter bore machines. 535

Machines, Apparatus, and Implements used in Sewing and Making Clothing and Ornamental Objects.

- 2 Rennes, D. W. van, Utrecht.—Sewing machine. 531

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- 3 Prakke, J. E. & H., Eibergen.—Leather straps; belting. 553

- 4 Haeff, G. & M., Lochem.—Leather straps; belting. 553

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- 5 Rennes, D. W. van, Utrecht.—Machine for moving liquids by heat. 560

- 6 Rietschoten, van, & Houwens, Rotterdam.—Model of engine for deepening rivers, etc. 563

- 7 Bikkers & Zoon, Rotterdam.—Fire extinguishers. 564

- 8 Burger, H., Deventer.—Velocipedes. 571

- 9 Heshuijsen, W. F., Sandpoort.—Railroad switch. 574

- 10 Bens, A., Deventer.—Coffee and bean mills. 585

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- 2 Alsing, J. R., Stockholm.—Model of cylinder for crushing hard materials. 505

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- 4 Roos, J. J., Norrköping.—Machine for making peat bricks. 505

- 5 Samuelson, S. H., Foskefors, Rada.—Machine for making hollow peat bricks. 505

- 6 Soderqvist, R., Göteborg.—Gas apparatus. 509

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- 7 Boethius, Emil, Stockholm.—Cork-cutting machines. 510

- 8 Bolinders, J. & C. G., Machine Manufacturing Stock Co., Stockholm.—Sawing machines. 510

- 9 Von Eesen, H. H., Baron, Tidaholm.—Iron for turning veneer. 510

- 10 Stridsberg & Björk, Thorstrållia.—Saws, planing irons, etc. 510

- 11 Fagersta Manufacturing Co., Westaular.—Saws. 510

- 12 Sandvikens Iron Works, Sandviken.—Piston rod for steam hammer. 514

- 13 Bolinders, J. & C. G., Stockholm.—Machinery for making metal cartridges; emery wheels. 515

- 14 Brehmer, E. F. A., Stockholm.—Drilling machine. 515

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- 19 Brehmer, E. F. A., Stockholm.—Paper-cutting machine. 546

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30 Morthin, P., Osthämmar.	
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31 Atterberg, H. J., Hagforsen, Rada. —Drawing of blowing engine:	562
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40 Asplund, Harald, Kristinehamn. —Railway wheels.	573
41 Ekman, Carl, Finspang. —Railway wheels.	573
42 Fagersta Bruks Aktiebolag, Westanors. —Railway axles and springs.	573
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45 Ankarsrums Works, Ankarsrum. —Railway switches.	574
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NORWAY.

(North of North Aisle, Columns 19 to 21.)

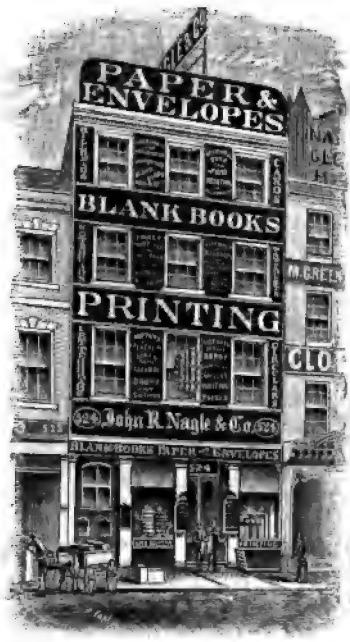
Machines, Motors, Ships' Models.

Machines and Implements of Spinning, Weaving, Felting, and Paper Making.	
1 O. Jacobsen's Mechanical Works, Christiania. —Mechanical mangle.	524
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6 Arentz, Hjalmar, Christiania. —Models and drawings of iron ships.	594

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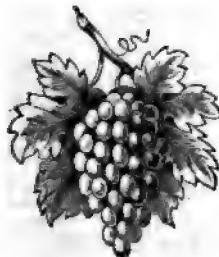
PHILADELPHIA.

TOBIASON & HEILBRUN,

Importers

BRANDIES,

WINES,



GINS, &c.

No. 1 Granite Street,

Opposite U. S. Bonded Warehouse,

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Sole Agents in U. S. for

CONTINENTAL GIN,
IMP. CROWN CADIZ SHERRY,
AMOROSO CADIZ SHERRY.

Models of Vessels.

7 Board of Commerce, Aalesund.— Models of fishing boats.	594	11 Hansen, Carl A., Porsgrund.— Models and drawings of sailing ves- sels.	594
8 Brandi, J., Christiania.—Drawings and models of sailing vessels.	594	12 Museum of Bergen, Bergen.—Mod- els of fishing boats.	594
9 Brunchorst & Dekke, Bergen.— Models of sailing vessels.	594	13 Naval Establishment of Carl Johans- værn, Horten.—Models of boats.	594
10 Gran, Jens, Bergen.—Models of sail- ing vessels.	594		

ITALY.

(North of North Aisle, Columns 16 to 19.)

Machines, Drawings, Models.

Machines, Tools, and Apparatus of Mining, Metallurgy, Chemistry, and the Extractive Arts.		Hydraulic and Pneumatic Apparatus.	
1 Paresi, E. Giuseppe, Parma.—Fur- nace for lime.	506	6 Gasparini, Giacomo, Rome.—Hy- draulic machine.	503
2 Agrarian Committee of Chiavari.— Sulphur machine.	508		
Machines and Implements of Spinning, Weaving, and Paper Making.		Agricultural Engineering and Ad- ministration.	
3 Ferrari, Bartolomeo, Parma.—Ap- paratus for silkworms.	520	7 Bertea, Stefano, Alessandria.—Le- zzenge machine.	582
Machines for Printing, Making Books, Paper Working, etc.		Aerial, Pneumatic, and Water Trans- portation.	
4 Perisi, Achille & Son, Naples.—Pi- anografo-voltacarte, mechanical inven- tion.	545	8 D'Allessandro, Benedetto, Benve- nuoto, Rome.—Life-preserver.	594
Motors, Power Generators, etc.		9 Villa, Cav. Ignazio, Milan.—Draw- ings of nautical machinery and archi- tecture.	594
5 Zanini, Pasquale, Rome.—Steam machine.	550	10 Origone, Paolo, Genoa.—Design for an iron steamer, and model in relief.	595
		11 Zaffarini, Cav. Cesare, Ferrara.— Nautical machine.	597

BRAZIL.

(South of North Aisle, Columns 16 to 21.)

Explosive and Pyrotechnic Apparatus, Weapons.

Chemical Manufactures.		Weapons, etc.	
1 Souza, Fausto de.—Metal fuses for artillery.	204	4 Army Arsenal, Rio de Janeiro. a Breech-loading rifle, and sword bayonet; revolver.	265
2 Pyrotechnical Laboratory, Rio de Janeiro.		b Model of rifled brass field gun, with ac- cessories.	266
3 Fuses for artillery.	204	c Mounted rifled gun and casemate; brass rifled gun and accessories; brass mortars; shot and shell, canister and grape fire.	
3 Apparatus for guiding signal rockets.	205		
3 Military Archives of Rio de Janeiro. —Pyrotechnical maps.	205		

MACHINERY.

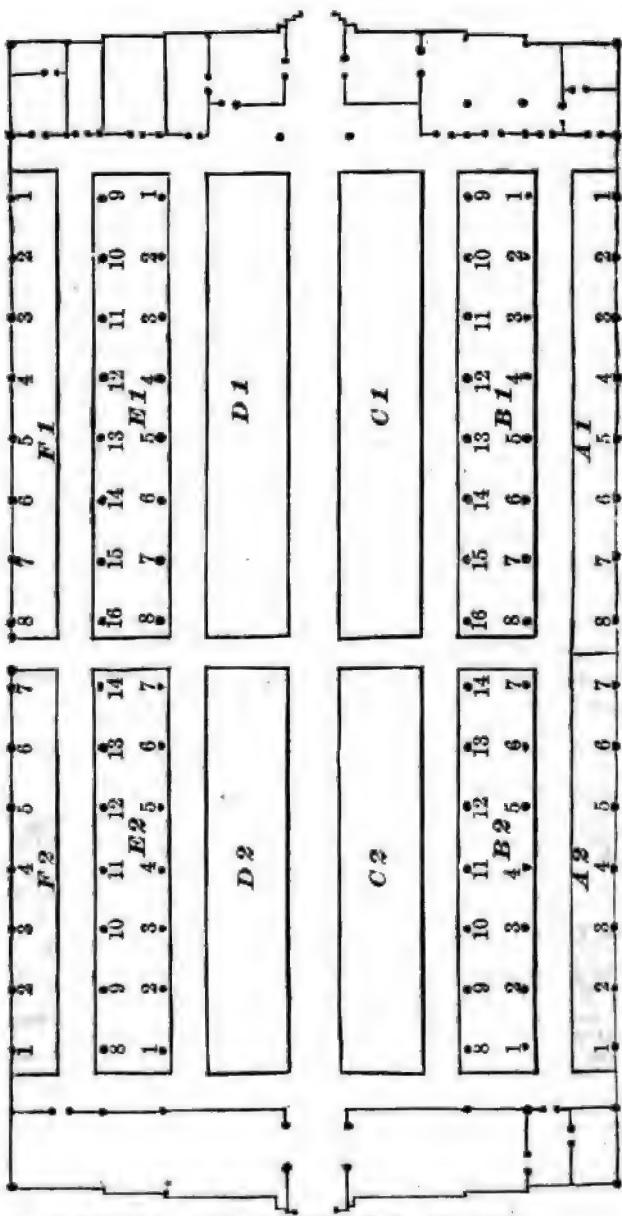
Weapons, Hardware, Motors, Pumps, Ships' Models.

heavy ordnance; apparatus for guiding rockets, used as a projectile.	267	Engineering, Architecture, Maps, etc.
Spears.	268	
5 Arsenal at Bahia. —Drum used by the Brazilian army.	265	16 Navy Yard at Rio de Janeiro. —Models of dry docks cut into the rock.
6 Arsenal in the Province of Rio Grande do Sul. —Weapons and articles used by the Brazilian army.	265	330
7 Navy Arsenal, Rio de Janeiro.		Motors, Power Generators, etc.
a Leather buckets for artillery service.	266	17 Navy Yard at Rio de Janeiro. —Models of engines for small monitors and mortar ships.
b Leather cartridge boxes for heavy ordnance.	267	551
Hardware, Edge Tools, Cutlery, and Metallic Products.		18 Costa, F. C. da. —Model of fire engine.
8 Silvino, Tripo di. —Hand tools.	280	552
9 Province of Minas Geraes. —Hand tools and instruments.	280	19 Bleunemback & Irmao. —Engine to be used as motor.
10 Arsenal of the Province of Bahia.		552
a Hand tools.	280	20 Navy Arsenal, Rio de Janeiro. —Steam engine to be used as motor at the pyrotechnical laboratory at Rio de Janeiro.
b Locks for naval and ships' stores.	284	552
11 Ipanema Iron Works.		21 Army Arsenal at Rio de Janeiro.
a Hand tools.	280	a Iron drums and chairs for transmitting motion.
b Imperial crown and cross of cast iron; samples of cast iron.	283	553
12 Army Arsenal, Rio de Janeiro. —Cast iron ventilator, and samples of cast iron.	283	b Screw and cog wheel for steam launches.
13 Santos, Cauto dos. —Imperial crown of cast iron; samples of cast iron.	283	554
14 Bleunemback & Brother. —Chair of cast iron; samples of iron grates.	283	Hydraulic and Pneumatic Apparatus.
15 Slichal, Fabiano. —Horse shoes of different shapes.	284	22 Costa, F. C. da.
		a Pumps.
		b Hydraulic rams.
		c Nozzle fire plug.
		23 Navy Yard, Rio de Janeiro. —Models of iron clads, casemate and monitor ships, men of war and steam launches; models of corvettes and launches, designed by Trajano de Carvalho.
		555
		Arboriculture and Forest Products.
		24 Navy Yard, Rio de Janeiro. —Samples of wood used for ship building.
		600

ARGENTINE REPUBLIC.

Cloth and Paper-Working Machines, Ships' Models.

Machines and Implements of Spinning, Weaving, and Paper Making.		Ayres.—Plan of a rotary machine with boiler.
1 Provincial Commission, Province of Santiago del Estero. —Weaving loom.	522	570
Machines for Printing, Making Books, Paper Working, etc.		Aerial, Pneumatic, and Water Transportation.
2 Estrada, Angel, Prov. of Buenos Ayres. —Samples of printing, types, electrotypes, corners, etc.	542	
3 Cafarre, Bernardo R., Province of Buenos Ayres. —Album of typographic works.	542	5 Office of the Harbor Master, Province of Buenos Ayres. —Model of mixed frigate, with wooden hull and auxiliary machine; models of steam lighter, pleasure steam yacht, and whaler.
Railway Plant, Rolling Stock, etc.		590
4 Gardella, Luis, Province of Buenos		6 Provincial Commission, Province of Corrientes. —Oars.
		590
		7 Roibon, Federico, Province of Corrientes. —Model of rafts for crossing the "Paso de la Patria" during the war with Paraguay, in 1866.
		590



SHOE AND LEATHER BUILDING.—GROUND PLAN.

SPECIAL BUILDINGS.

SHOE AND LEATHER BUILDING. No. 57.

Architect, A. B. BARRY.—Size, 300 feet by 160 feet.

Constructed of wood, one story high, and situated south of Machinery Hall, between it and the barrier. Its name indicates its purpose.

KEY TO THE NOTATION.

THE location of objects in the Shoe and Leather Building is shown by a letter and two figures, indicating the nearest column of the building. The letter and first figure designate the section of the building, the second figure the column within that section. The system of numbering is shown on the annexed ground plan.

The class of the classification to which each exhibit belongs is indicated by the small figures at the end of the line.

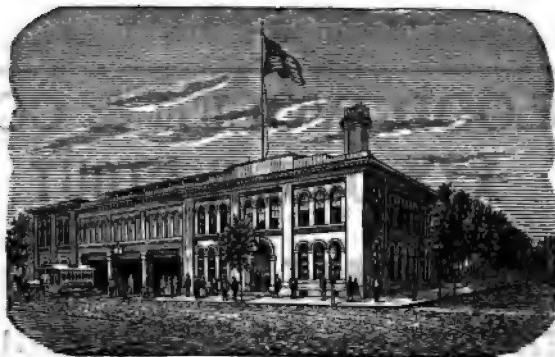
Oils, Blacking, Boots and Shoes.

Chemical.	
1	Dodd, A. W., & Co., Gloucester, Mass.—Oils for tanners' use. F 2-3. 201
Blacking.	
2	Miller, Frank, Son, & Co., New York, N. Y.—F 1-4.
3	Harness oils. 201
4	Shoe blacking, leather dressings, etc. 202
5	Levi & Berg, Philadelphia, Pa.— Shoe blacking and ladies' shoe dressing. F 1-5. 202
6	Annear, John, Philadelphia, Pa.— Shoe blacking and stove polish. F 1-3. 202
7	Mason, Jas. S., & Co., Philadelphia, Pa.—Shoe blacking. F 1-5. 202
8	Axford & Veron, Philadelphia, Pa.— Shoe blacking. F 1-3. 202
9	Bixby, S. M., & Co., New York, N. Y.—Shoe blacking and leather dressing. F 1-4. 202
10	Restorff & Bettman, New York, N. Y.—Leather polish for boots, shoes, traveling bags, etc. B 2-2. 202
11	Sawyer, H., Boston, Mass.—Crys- tal blue. F 1-3. 202
Boots and Shoes.	
12	Reed, Geo. H., & Sons, Boston, Mass.—Dressings, inks, varnishes, and stains for leather. F 1-3. 202
13	Hauthaway, C. L., & Sons, Boston, Mass.—Leather dressings, blackings, stains, and varnishes. E 1-11. 202
14	Johnson, N. M., St. Louis, Mo.— Boots and shoes. C 2-11. 251
15	Wells, M. D., & Co., Chicago, Ill.— Boots and shoes. C 2-11. 251
16	Fargo, C. H., & Co., Chicago, Ill.— Women's, misses', and children's shoes; men's boots. C 2-11. 251
17	Failey, L., & Co., Lafayette, Ind.— Men's, boys', and women's calf and kip boots and shoes. C 1-15. 251
18	Knees, Chas., Frederick, Md.—Cor- dovan leather patterns for boots and shoes. D 1-8. 251
19	Semenety, Rudolf, Cleveland, Ohio.— English top boots. D 2-4. 251
20	Stribley & Co., Cincinnati, Ohio.— Ladies', misses' and children's shoes. C 2-13. 251

THE WEST PHILADELPHIA Passenger Railway Company

MARKE~~T~~ STREET LINE.

Shortest and quickest route to the Centennial Buildings.
Runs within a short distance of Zoological Gardens, also
connects directly with all Railroad Depots, Ferries, and
Steamboat Landings. Passes both ways Pennsylvania
Railroad Depots (for New York and the West).



CENTENNIAL GROUNDS.

Passengers can take any of the cars of this Company on Market Street for the Centennial Grounds.

First cars leave the depot at 4.30 A. M.

Last car leaves the depot at 11.45 P. M.

First car leaves Front and Market Streets at 5.15 A. M.

Last car leaves Front and Market Streets at 12.30 A. M.

RATES OF FARE.—For adults, seven cents; children under 12 years of age, four cents. Coupon Tickets, sold by the Conductor, four for twenty-five cents, good on any Philadelphia City Railway. Exchange Tickets, nine cents, good on any Railway running across Market street except the Union Line. On cars connecting with arriving trains after midnight, ten cents.

The Market street cars convey passengers to and from the ferries on the Delaware River for Camden, New Jersey, and the depots at the foot of Market street, of the Cape May, Millville, Bridgeton, Salem, Burlington County, Pemberton, and Hightstown, and Amboy Railroads; also, to and from the Pennsylvania Central Railroad Depots, at Thirty-first and Market streets, for New York and the East, or for Pittsburgh and the West and South.

They also pass Independence Hall (within one block), Bingham House, Farmers' Market, Masonic Temple, New Public Buildings, U. S. Mint, and the Pennsylvania Hospital for the Insane, and within one square of Merchants', Continental, Girard, La Pierre, St. Cloud, St. Stephens, West End, and Colonnade Hotels, and the West Chester and Philadelphia Railroad depot, at Thirty-first and Chestnut streets, and within a block of nearly all Places of Amusement.

**BLOOD, WOLFE & CO.'S
XXX DUBLIN STOUT**

AND

PALE ALES,

LIVERPOOL AND LONDON, ENGLAND.

Agents in all principal cities in the United States.

Boots and Shoes.

- 19 Hocker, Geo., Cincinnati, Ohio.**—Ladies' and gentlemen's boots and shoes. C 2-13. 251
- 20 Kilsheimer, F., Cincinnati, Ohio.**—Men's boots, shoes, and gaiters. C 2-13. 251
- 21 Prichard, Smith, & Co., Cincinnati, Ohio.**—Boots and shoes. C 2-12. 251
- 22 Alter, Frank, & Co., Cincinnati, Ohio.**—C 2-12. 251
- 23 Cincinnati Shoe Manufacturing Co., Cincinnati, Ohio.**—Ladies', misses', and children's boots and shoes. C 2-12. 251
- 24 Feary, Thos., & Sons, Albany, N. Y.**—Ladies', misses', children's, and infants' shoes. D 1-2. 251
- 25 East New York Boot, Shoe, and Leather Manufacturing Co., Albany, N. Y.**—Women's, misses', and children's shoes. C 2-13. 251
- 26 Newcomb & Walker, Elmira, N. Y.**—Men's, boys', youths', women's, misses', and children's shoes. C 1-13. 251
- 27 Burt, Edwin C., & Co., New York, N. Y.**—Ladies' shoes. C 2-14. 251
- 28 Burt & Mears, New York, N. Y.**—Men's boots and shoes. C 2-14. 251
- 29 Bay State Shoe and Leather Co., New York, N. Y.**—Boots and shoes. C 2-14. 251
- 30 Thierry, Ernest J., New York, N. Y.**—Gentlemen's gaiters, shoes, and slippers. C 2-14. 251
- 31 Brooks, Edwin A., New York, N. Y.**—Cork-sole boots and shoes. C 2-13. 251
- 32 Creed, Eugene, New York, N. Y.**—Boot, shoe, and gaiter uppers. C 1-15. 251
- 33 Kenny & McPartland, New York, N. Y.**—Ladies', misses', and children's shoes. C 2-11. 251
- 34 Leh, H., & Co., Allentown, Pa.**—Boots and shoes. D 2-4. 251
- 35 Adler & Clement, Baltimore, Md.**—Ladies', misses', and children's shoes; leather tips formed from the sole. D 2-5. 251
- 36 Dixon, W. T., & Bro., Baltimore, Md.**—Ladies', misses', and children's shoes. C 2-10. 251
- 37 Banister & Tichenor, Newark, N. J.**—Men's and boys' boots, shoes, and slippers. D 2-4. 251
- 38 Canfield, W. B., & J., Newark, N. J.**—Gentlemen's boots and shoes. D 2-5. 251
- 39 Miller, McCullough, & Ober, Newark, N. J.**—Gents' boots and shoes. D 2-4. 251
- 40 Brown, Alex. P., & Co., Philadelphia, Pa.**—Ladies', misses', children's, and infants' boots and shoes. C 1-15. 251
- 41 Evans, Thos. R., Philadelphia, Pa.**—Gaiters, boots and shoes. C 1-12. 251
- 42 Wireman, Henry, Philadelphia, Pa.**—Ladies' shoes. C 1-14. 251
- 43 Erskine, M. A., & Co., Philadelphia, Pa.**—Ladies' shoes. C 1-12. 251
- 44 Graf, L., & Bro., Newark, N. J.**—Boots and shoes. D 2-5. 251
- 45 West Brothers, Philadelphia, Pa.**—Ladies', misses', children's, and infants' shoes. C 1-13. 251
- 46 Gates, Allen, & Bro., Philadelphia, Pa.**—Ladies' boots, shoes, and slippers. C 1-14. 251
- 47 Sollers, S. D., & Co., Philadelphia, Pa.**—Infants' and children's shoes and slippers. C 1-14. 251
- 48 Richelderfer, J. H., Philadelphia, Pa.**—Over gaiters and leggings. C 1-13. 251
- 49 Kelley & Moore, Philadelphia, Pa.**—Ladies' shoes. C 1-12. 251
- 50 Targett, John, Philadelphia, Pa.**—Boot, shoe, and gaiter patterns. C 1-12. 251
- 51 Schmid, Jacob, Philadelphia, Pa.**—Ladies' boots and shoes. C 1-12. 251
- 52 Benkert, C., & Son, Philadelphia, Pa.**—Gentlemen's boots and shoes. C 1-16. 251
- 53 Zau, Jacob, & Son, Philadelphia, Pa.**—Men's boots and shoes. C 1-13. 251
- 54 Dreisbach, Wm., & Co., Philadelphia, Pa.**—Shoe bows and wooden heels. C 1-15. 251
- 55 Heulings, Abram, Philadelphia, Pa.**—Boots and shoes, with ice creeper attached. C 1-15. 251
- 56 Meyer, C. A. Adolph, Philadelphia, Pa.**—French calf boots, shoes, and gaiters. C 1-12. 251
- 57 Helweg & Co., Philadelphia, Pa.**—Boots and shoes. C 1-16. 251
- 58 De Warne, Laurens E., Philadelphia, Pa.**—Boots and shoes. C 1-14. 251
- 59 Mayer & Stern, Philadelphia, Pa.**—Ladies', childrens', and infants' shoes. C 1-12. 251
- 60 Dalsheimer Bros., Philadelphia, Pa.**—Ladies', misses', childrens', and infants' shoes. C 1-15. 251
- 61 Saussier, Dangler, & Co., Philadelphia, Pa.**—Women's, misses', and children's shoes. C 1-13. 251
- 62 Ziegler Bros., Philadelphia, Pa.**—Ladies', misses', children's, and infants' shoes. C 1-13. 251
- 63 Laird, Schober, & Mitchell, Philadelphia, Pa.**—Boots and shoes. C 1-15. 251
- 64 Schoff, W. L., Philadelphia, Pa.**—Children's shoes, and ladies' white kid boots and slippers. C 1-15. 251
- 65 Simonds, N. J., Woburn, Mass.**—Bevel and moulded heel stiffenings from leather and leather boards. D 2-6. 251
- 66 Walker, J. H., & G. M., Worcester, Mass.**—Boots. D 1-8. 251
- 67 Hamilton Web Co., Wickford, R. I.**—Boot and gaiter webs. E 1-6 and 14. 251
- 68 Lilly, Young, Pratt, & Brackett, Boston, Mass.**—Men's, boys', and youths' boots and shoes. D 1-3. 251
- 69 Connolly & Power, Boston, Mass.**—Gentlemen's boots, shoes, and gaiters. D 2-6. 251
- 70 Haskell, B. C., & Dickerman, Boston, Mass.**—Shoe findings, buckles, buttons, laces, button hooks, over gaiters, shoe trimmings, and tools. D 2-7. 251
- 71 Jones, Frederick, & Co., Boston, Mass.**—Boots and shoes. D 1-3. 251

SPECIAL BUILDINGS.

Boots, Shoes, Trunks, Harness.

- 72** Batcheller, E. & A. H., & Co., Boston, Mass.—Men's, boys', youths', women's, and misses' boots, shoes, and brogans. D 1-1. 25¹
- 73** Henshaw, Ed., Boston, Mass.—Shoe findings, tools, store supplies, etc. D 2-7. 25¹
- 74** Mudge, E. & A., & Co., Boston, Mass.—Boots and shoes. D 1-4. 25¹
- 75** Lane, Jenkins, & Sons, Boston, Mass.—Boots, shoes, and brogans. D 1-1. 25¹
- 76** Fogg, Houghton, & Coolidge, Boston, Mass.—Men's, boys', youths', women's, and children's boots and shoes. D 1-1. 25¹
- 77** Dane, I. F., Grinnell, & Co., Boston, Mass.—Men's boots, brogans, etc. D 1-3. 25¹
- 78** Robbins & Kellogg, Boston, Mass.—Women's, misses', and children's shoes. D 1-3. 25¹
- 79** Emerson's, Thomas, Sons, Boston, Mass.—Men's, boys', and youths' shoes. D 1-1. 25¹
- 80** Sears & Warner, Boston, Mass.—Shoe manufacturers' goods, lastings, and serges. D 1-8. 25¹
- 81** Packert, Charles D., & Co., Lynn, Mass.—Ladies' and misses' boots and shoes. D 1-7. 25¹
- 82** Ventilating Waterproof Shoe Co., Lynn, Mass.—Ladies' and misses' boots. D 1-7. 25¹
- 83** The Moulded Heel Stiffening Co., Lynn, Mass.—Moulded rubber counters for boots and shoes. D 1-7. 25¹
- 84** Tebbetts, Charles B., Lynn, Mass.—Ladies' and gents' boots, shoes, slippers, and fancy ties. D 1-7. 25¹
- 85** Woolredge, A. M., Lynn, Mass.—Ladies' shoes. D 1-7. 25¹
- 86** Bancroft, E. F., & Co., Lynn, Mass.—Ladies' and misses' boots and shoes, and ladies' and gents' fancy and plain slippers. D 1-7. 25¹
- 87** Mower & Brother, Lynn, Mass.—Ladies' and misses' boots and buskins. D 2-7. 25¹
- 88** Sweetzer, C. S., & Co., Lynn, Mass.—Ladies' and misses' boots. D 1-7. 25¹
- 89** Breed, W. F., Dole, & Co., Lynn, Mass.—Ladies' and misses' boots. D 1-7. 25¹
- 90** Breed, F. W., Lynn, Mass.—Ladies' boots and shoes. D 1-7. 25¹
- 91** Breed, A. F., Lynn, Mass.—Men's, ladies', and misses' boots and shoes. D 1-7. 25¹
- 92** Coffin, C. A., & Co., Lynn, Mass.—Men's boots and shoes. D 1-7. 25¹
- 93** Mudge, W. R., Lynn, Mass.—Leather, straw, and pattern boards, paper soles, stiffenings, etc. D 1-6. 25¹
- 94** Sutherland, J. G., Lynn, Mass.—Boot and shoe patterns, and sample boots and shoes. D 1-7. 25¹
- 95** Buffum, Charles, Lynn, Mass.—Ladies' and misses' boots. D 1-7. 25¹
- 96** Mower, F. B., Lynn, Mass.—Ladies', misses', and children's boots. D 1-7. 25¹
- 97** Ordway & Clark, Haverhill, Mass.—Ladies' and gents' walking-boots and slippers. D 1-6. 25¹
- 98** How, Moses, Haverhill, Mass.—Ladies' and misses' shoes and slippers. D 1-5. 25¹
- 99** Goodrich & Whitehouse, Haverhill, Mass.—Misses', children's, and infants' boots and shoes. D 1-6. 25¹
- 100** Goodrich & Porter, Haverhill, Mass.—Ladies' and misses' boots and shoes. D 1-5. 25¹
- 101** How, George C., Haverhill, Mass.—Kid slippers and ties. D 1-6. 25¹
- 102** Gardner Bros., Haverhill, Mass.—Ladies' and misses' boots and shoes. D 1-5. 25¹
- 103** Farrar, John B., Haverhill, Mass.—Gents' boots and opera and low-cut shoes. D 1-6. 25¹
- 104** Johnson, L., & Co., Haverhill, Mass.—Ladies' and gentlemen's shoes and slippers. D 1-6. 25¹
- 105** Nichols, George H., & Co., Haverhill, Mass.—Men's boots and shoes. D 1-6. 25¹
- 106** Goodrich, J., Jr., Haverhill, Mass.—Ladies' boots. D 1-6. 25¹

Trunks, Valises, etc.

- 107** Simon, Edward, & Bro., New York, N. Y.—Trunks, bags, bag frames and trimmings, and fancy brass goods. G 2. 25⁵
- 108** Lagowitz, J., & Co., New York, N. Y.—Trunks, traveling bags, and satchels. G 2. 25⁵
- 109** Hacker, J. C., & Co., New York, N. Y.—Pocket books, bill books, card and cigar cases, etc. G 2. 25⁵
- 110** Lambert, P. W., & Co., New York, N. Y.—Pocket books, belts, fine zinc toys, and Russia leather goods. G 1. 25⁵
- 111** Gillmore, J. C., & Co., New York, N. Y.—Fine trunks, traveling cases, and bags. G 1. 25⁵
- 112** Thorne, John W., New York, N. Y.—Saratoga trunk and trunk clamp. G 1. 25⁵
- 113** Crouch & Fitzgerald, New York, N. Y.—Trunks, valises, shawl straps, and leather goods. G 1. 25⁵
- 114** Spitzer, Geo. W., New York, N. Y.—Fans, jewelry cases, and fancy leather goods. G 1. 25⁵
- 115** Simpson, J. F., Philadelphia, Pa.—Trunk closer, lock, strap, and socket. G 1. 25⁵
- 116** Watt, F. H., Philadelphia, Pa.—Trunks, traveling bags, and fancy leather goods. G 2. 25⁵
- 117** Unruh, John, & Sons, Philadelphia, Pa.—Leather trunks and valises. G 1. 25⁵
- 118** Waas, H. A., Philadelphia, Pa.—Trunk. G 2. 25⁵
- 119** Palmer, St. George H., Nashville, Tenn.—Army, sportsmen's, travelers', and miners' equipments. G 2. 25⁵

Hardware, Saddlery.

- 120** Albright, Andrew, Newark, N. J.—Hard rubber-coated harness and carriage trimmings. D 2-2. 25⁴

Harness, Trimmings, Rubber Goods, Machinery.

- 121 Celluloid Harness Trimming Co., Newark, N. J.**—Celluloid martingale rings and harness mountings. D 2-1. 284
- 122 Kuenhold, F. B., Newark, N. J.**—Saddlery and coach hardware. D 2-2. 284
- 123 Crane & Co., Newark, N. J.**—Flexible rubber bits, wrought hand-forged bits. D 2-2. 284
- 124 Theberath, Charles M., & Bro., Newark, N. J.**—Fine saddlery, hardware, and trimmings. D 2-3. 284
- 125 Manning & Lyon, Newark, N. J.**—Winkers and winker plates. D 2-1. 284
- 126 Buerman, August, Newark, N. J.**—Saddlery and harness hardware, bits, spurs, etc. D 2-1. 284
- 127 Wiener & Co., Newark, N. J.**—Saddlery, hardware, and trimmings. D 2-1. 284
- 128 Tompkins, Samuel E., & Co., New York, N. Y.**—Silver-plated coach and harness hardware. D 2-1. 284
- 129 Waldron, J. V., & Bro., New York, N. Y.**—Crests, coats of arms, monograms, bits, bosses, rosettes, etc., for harness. D 2-1. 284
- 130 Reynolds, Samuel, & Co., Pittsburgh, Pa.**—Saddlery hardware, iron hames, and malleable iron castings. D 2-2. 284
- 131 Jenks, A. S., Philadelphia, Pa.**—Bits. D 2-3. 284
- Fabrics of Vegetable, Animal, or Mineral Materials.**
- 132 Davidson Rubber Co., Boston, Mass.**—Rubber goods. C 2-8. 285
- 133 Gossamer Rubber Co., Boston, Mass.**—Gossamer water-proof cloaks, coats, and overcoats, hats, caps, and umbrellas. G 1. 285
- 134 Taylor, W. B. S., New York, N. Y.**—Flexible tubing, and gas-proof cloth. C 2-9 and 10. 285
- 135 Goodyear Rubber Co., New York, N. Y.**—Rubber goods, enameled and table oil cloths. C 2-9 and 10. 285
- 136 National Rubber Co., Providence, R. I.**—Rubber boots, shoes, clothing, cloths, stationers' and druggists' articles, mats, belting, hose, cushions, beds, pillows, etc. C 2-9. 285
- 137 New Brunswick Rubber Co., New Brunswick, N. J.**—Rubber boots and shoes. C 2-11. 285
- 138 Vulcanized Fibre Co., Wilmington, Del.**—Hard and flexible goods of vulcanized fibre. G 1. 285
- 139 Chadeayne & Christian, Yonkers, N. Y.**—Rubber boots. G 1. 285
- Carriages, Vehicles, and Accessories.**
- 140 Peters & Calhoun Co., Newark, N. J.**—Harness, saddles, and bridles. E 1-12. 296
- 141 Clements, J., & Bro., Newark, N. J.**—Saddlery and fancy leather goods. E 1-13. 296
- 142 Kessler & Bro., Philadelphia, Pa.**—Wooden and plated harness. E 1-5. 296
- 143 Haedrick, Henry G., & Sons, Philadelphia, Pa.**—Harness and saddlery; preparation for polishing and dressing harness. E 1-10. 296
- 144 Moyer, E. P., & Bros., Philadelphia, Pa.**—Harness, saddlery, and trunks. E 1-3. 296
- 145 Hansell, W. S., & Sons, Philadelphia, Pa.**—Harness and saddlery, and horse clothing. E 2-4. 296
- 146 Lynch, Anthony, Philadelphia, Pa.**—Gold-mounted double and single harness. E 1-10. 296
- 147 Sallada & Pearson, Philadelphia, Pa.**—Ladies' and gentlemen's riding and driving whips. E 1-13. 296
- 148 McFadden, Patrick, Philadelphia, Pa.**—Single harness and saddlery. F 1-1. 295
- 149 Yeager, Daniel A., Media, Pa.**—Double and single harness, riding saddles, and bridles. E 1-2. 296
- 150 Wilson, R. F., Milton, Pa.**—Fly nets. E 1-4. 296
- 151 Weaver & Bardall, Western Penitentiary, Pittsburg, Pa.**—Leather whips. E 1-13. 296
- 152 Moseman, C. M., & Bro., New York, N. Y.**—Single and double harness and saddlery. E 1-1 and 9. 296
- 153 Koine & Currie, New York, N. Y.**—Single and double harness. E 1-5. 296
- 154 Moore, Thomas, New York, N. Y.**—Plain and fancy horse collars. E 1-2. 296
- 155 Manheim, William, New York, N. Y.**—Harness loops and back curtain loops. F 1-2. 296
- 156 American Whip Co., Westfield, Mass.**—Driving and riding and leather whips and lashes. F 1-1. 296
- 157 Wilder, J. Lyman, Hartford, Conn.**—Patent leather harness work, rosettes, etc. E 1-5. 296
- 158 Hill, James R., & Co., Concord, N. H.**—Single and double harness and collars. E 1-1 and 9. 296
- 159 Gale, A. D., Pittsfield, Mass.**—Double coach harness and paper trunk. E 1-6. 296
- 160 Motts, George, Washington, D. C.**—Gold mounted buggy harness. E 1-4. 296
- 161 Lighthouse, J. C., Rochester, N. Y.**—Horse collars and pads. E 1-5. 296
- 162 Stewart, John P., Rochester, N. Y.**—Carriage and draft horse collars. E 1-13. 296
- Leather Machinery.**
- 163 Pusey, Jones, & Co., Wilmington, Del.**—Tanning apparatus and glazing machine for morocco factory. E 2-3 and 10. 532
- 164 Walters, G. C., Philadelphia, Pa.**—Wet-skin sewing machine. E 2-2 and 9. 532
- 165 Langfeld, I., & Sons, Philadelphia, Pa.**—Pocket books and fancy leather goods. E 2-3 and 10. 532
- 166 Horn, W. H., & Bro., Philadelphia, Pa.**—Tanners', curriers', and shoe-makers' tools and machinery. E 2-11. 532
- 167 Osborne, C. S., & Co., Newark, N. J.**—Saddlers' and harness makers' tools. E 2-4 and 11. 532

SPECIAL BUILDINGS.**Leather and Shoe Machinery, Leather**

- 168** Knox, David, Lynn, Mass.—Pebbling and polishing machine; sole-cutting machine. F 2-4. 532
- 169** Coogan, Owen, Pittfield, Mass.—Boarding and graining machine. E 2-10. 532
- 170** Reed, Harvey, Vineland, N. J.—Combination tannery. F 2-5. 532
- 171** Lockwood, Frederick A., Fall River, Mass.—Automatic leather-scouring machine. E 2-12. 532
- 172** Baker, George W., Wilmington, Del.—Skin-sewing machine. E 2-9 and 12. 532
- 173** Fisk, Joseph E., Salem, Mass.—Leather-whitening and buffing machine. E 2-10. 532
- 174** Lampert, Henry, Rochester, N. Y.—Round beam hide worker. E 2-9. 532
- 175** Rosensheil, W. H., Johnstown, Pa.—Model of leather-dressing machine. F 2-5. 532
- 176** Thompson & Navell, Boston, Mass.—Bark-cutting andbossing machine. F 2-6. 532
- 177** Swain, Fuller, & Co., Lynn, Mass.—Beating-out, moulding, and buffing machines. E 2-6 and 14. 532
- 178** Plummer, W. E., Boston, Mass.—Leather, buffing, whitening, and skiving machine; rotary tan press; round beam for leaching bark. E 2-12. 532
- 179** Gibson, F. N., New Ipswich, N. H.—Raising, creasing, and wavering machine for harness makers, etc. F 2-6. 532
- Shoe Machinery.**
- 180** Tapley Heel Burnishing Machine Association, Boston, Mass.—Heel-burnishing machine. E 1-7 and 15. 533
- 181** Tubular Rivet Co., Boston, Mass.—Rivets for boots, shoes, harness, belting, etc. F 2-6. 533
- 182** American Shoe Tip Co., Boston, Mass.—Boots and shoes with wire-quilted soles and toe protection. F 2-7. 533
- 183** Reversible Boot Heel Co., Providence, R. I.—Reversible boot heel. E 2-15. 533
- 184** Howe Machine Co., Bridgeport, Conn.—Boot and shoe sewing machines. F 2-3. 533
- 185** Buzzell, J. G., & Co., Lynn, Mass.—Buffing and heel scouring machines. F 2-6. 533
- 186** Carver Cotton Gin Co., East Bridgewater, Mass.—Leveling, counter skiver, and web cutter, and shank machines. F 2-5. 533
- 187** McKay Sewing Machine Association, Boston, Mass.—Shoe sewing and riveting machines. E 2-15. 533
- 188** May, Withey, & Drake, Lynn, Mass.—Shoe drying machine. F 2-6. 533
- 189** Stimpson, Edwin B., New York, N. Y.—Shoe machinery. E 2-6 and 14. 533
- 190** Hassan & Dewees, New York, N. Y.—Cutting dies and punches, shoe patterns, and lasts. F 2-5. 533
- 191** Martin Sewing Machine Co., New York, N. Y.—Shoe sewing machine. E 2-11. 533
- 192** S. W. Jamison Boot and Shoe Crimping Machine Co., New York, N. Y.—Steam boot and shoe crimping machine. E 2-6 and 13. 533
- 193** Goodyear & McKay Sewing Machine Association, Boston, Mass.—Shoe sewing machines. E 1-6 and 16. 533
- 194** Graves, L. S., Rochester, N. Y.—Machines for stripping, splitting, rolling, and moulding, and heel pressing. E 2-7 and 14. 533
- 195** Proser, T. J., Chicago, Ill.—Boot and shoe nailing machine. E 2-5 and 12. 533
- 196** Cutlace Shoe Sewing Machine Co., Philadelphia, Pa.—Turned shoe sewing machine, channer and edge turner. F 1-8. 533
- 197** Redifer, S. S., Philadelphia, Pa.—Shoe lasts, patterns, and dies. D 2-2. 533
- 198** Miller, Thomas L., Philadelphia, Pa.—Beveling, channeling, moulding, and sewing machines for shoes. F 2-4. 533
- 199** Stoops, A. T., Philadelphia, Pa.—Circular-feed sewing machine. E 2-11. 533
- 200** Cushman, C. S., Philadelphia, Pa.—Leather and shoe stitching attachment. E 2-4 and 11. 533
- 201** Evans, Thomas R., Philadelphia, Pa.—Boot and shoe tree, lengthener, stretcher, and lasts. E 2-3. 533
- 202** Smith, J. Barton, & Co., Philadelphia, Pa.—Raspes and files for shoemakers and manufacturers. E 2-13. 533
- 203** Graf, Leopold, Newark, N. J.—Shoe burnishing and polishing machine. F 2-4. 533
- Animal and Vegetable Products.**
- 204** Wedekind, Hallenburg, & Bro., Louisville, Ky.—Oak sole leather. A 2-3. 652
- 205** Trautwein, C., & Co., Louisville, Ky.—Chestnut oak sole leather. A 2-3. 652
- 206** Stod, J. B., & Co., Louisville, Ky.—Oak skirting leather. B 2-3 to 10. 652
- 207** Ohio Falls Oak Leather Co., Louisville, Ky.—Oak harness, bridle, and belting leather. A 2-3. 652
- 208** Conrad, Fabel, & Mooney, Louisville, Ky.—Oak sole leather. B 2-3 to 10. 652
- 209** Schellberg, B. F., Germania P. O., Als.—Rough leather. A 2-7. 652
- 210** Burt, F. H., & Son, Mansington, W. Va.—Oak sole leather. A 2-7. 652
- 211** Wisconsin Leather Co., Milwaukee, Wis.—Sole, upper, and harness leather. A 2-5, B 2-5. 652
- 212** Hidden, E. S., Milburn, N. J.—Leather braids, fibre, in boards and loose, washers, etc. A 2-3. 652
- 213** Hurkamp, J. G., Frederickburg, Va.—Virginia sumac. A 2-3. 652
- 214** Less, McVitty, & Sons, Philadelphia, Pa.—Oak sole leather. A 2-6. 652
- 215** Keen & Coates, Philadelphia, Pa.—Oak-tanned sole leather for finest boot and shoe work. A 2-6. 652

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Strong, Pure, and Rich Blood, Increase of Flesh and Weight, Clear Skin, and Beautiful Complexion secured to all through

DR. RADWAY'S SARSAPARILLIAN RESOLVENT

Every drop of the Sarsaparillian Resolvent communicates through the Blood, Sweat, Urine, and other fluids and juices of the system the vigor of life, for it repairs the wastes of the body with new and sound material. Scrofula, Consumption, Glandular Disease, Ulcers in the Throat, Mouth, Tumors, Nodes in the Glands and other parts of the system, Sore Eyes, Strumous Discharges from the Ears, and the worst forms of Skin Diseases, Eruptions, Fever Sores, Scald Head, Ring Worm, Salt Rheam, Erysipelas, Acne, Black Spots, Worms in the Flesh, Tumors, and all Weakening and Painful Discharges and Night Sweats are within the curative range of this wonder of Modern Chemistry, and a few days use will prove to any person using it for either of these forms of disease, its potent power to cure them. If the patient, daily becoming reduced by the wastes and decomposition that are continually progressing, succeeds in arresting these wastes, and repairs the same with new material, made from healthy blood, and this the Sarsaparillian will and does secure, a cure is certain; for, when once this remedy commences its work of purification and succeeds in diminishing the loss of wastes, its repairs will be rapid, and every day the patient will feel himself growing better and stronger, the food digesting better, appetite improving, and flesh and weight increasing. Not only does the **SARSAPARILLIAN RESOLVENT** excel all known remedial agents in the cure of Chronic, Scrofulous, Constitutional, and Skin Diseases, but it is the only positive cure for Kidney, Bladder, and Urinary Diseases, Gravel, Diabetes, Dropsy, Stoppage of Water, Incontinence of Urine, Bright's Disease, Albuminuria, and in all cases where there are brickdust deposits, or the water is thick, cloudy, mixed with substance like the white of an egg, or threads like white silk, or there is a morbid, dark, bilious appearance, and white bonedust deposits, and when there is a pricking, burning sensation when passing water, and pain in the Small of the Back along the Loins.

Tumor of 12 years' growth cured by Radway's Resolvent.

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R. R. R.

RADWAY'S READY RELIEF

Cures the worst pains in from one to twenty minutes. Not one hour after reading this advertisement need any one suffer with pain. Radway's Ready Relief is a cure for every pain. It was the first and is **THE ONLY PAIN REMEDY** that instantly stops the most excruciating pains, allays Inflammations, and cures Congestions, whether of the Lungs, Stomach, Bowels, or other glands or organs, by one application, *in from one to twenty minutes*. No matter how violent or excruciating the pain the Rheumatic, Bedridden, Infirm, Crippled, Nervous, Neuralgic, or prostrated with disease may suffer,

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Will afford instant ease. Inflammation of the Kidneys, Inflammation of the Bladder, Inflammation of the Bowels, Congestion of the Lungs, Sore Throat, Difficult Breathing, Palpitation of the Heart, Hysterics, Croup, Diphtheria, Catarrh, Influenza, Headache, Toothache, Neuralgia, Rheumatism, Cold Chills, Ague Chills. The application of the READY RELIEF to the part or parts where the pain or difficulty exists will afford ease and comfort. Twenty drops in a half tumbler of water will, in a few moments, cure Cramps, Spasms, Sour Stomach, Heartburn, Sick Headache, Diarrhoea, Dysentery, Colic, Wind in the Bowels, and all Internal Pains. Travelers should always carry a bottle of RADWAY'S RELIEF with them. A few drops in water will prevent sickness or pains from change of water. It is better than French Brandy or Bitters as a stimulant.

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Perfectly tasteless, elegantly coated, for the cure of all Disorders of the Stomach, Liver, Bowels, Kidneys, Bladder, Nervous Diseases, Headache, Constipation, Costiveness, Indigestion, Dyspepsia, Biliousness, Bilious Fever, Inflammation of the Bowels, Piles, and all Derangements of the Internal Viscera. Warranted to effect a Positive Cure. RADWAY'S PILLS will free the system from all the above-named disorders. Price, 25 cents per box.

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Cure for Dyspepsia, Liver Com-
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Impurities of the Blood. An
Excellent Tonic.

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- 216 Williams, Chas. B., & Sons, Philadelphia, Pa.**—Oak-tanned slaughter sole leather. A 2-6. 652
- 217 Horton, Crary, & Co., Sheffield, Pa.**—Hemlock sole leather. A 1-5. 652
- 218 Shriner, A. K., & Sons, Union Mills, Md.**—Oak sole leather. A 1-5. 652
- 219 Sommerville, Jas. L., Bellefonte, Pa.**—Oak sole and belt leather. A 1-6. 652
- 220 Downing & Price, Wilmington, Del.**—Oak sole and bd't leather. A 1-6. 652
- 221 DeLong Bros., Philadelphia, Pa.**—Oak rough slaughter leather. A 2-7. 652
- 222 Spanogle & Pennabaker, Philadelphia, Pa.**—Oak sole leather. A 2-6. 652
- 223 Hibernia Tannery, Blairstown, Pa.**—Buenos Ayres sole leather. A 2-5 and 6. 652
- 224 Hench, Geo., Centre, Pa.**—Hemlock sole leather. A 2-5 and 6. 652
- 225 Hench, A. L., Alum Banks, Pa.**—Hemlock sole leather. A 2-5 and 6. 652
- 226 McNeal & Black, Man's Choice, Pa.**—Slaughter sole. A 2-5 and 6. 652
- 227 Mapleton Tannery, Mapleton, Pa.**—Texas sole. A 2-5 and 6. 652
- 228 Rife, Henry J., Philadelphia, Pa.**—Sole and harness leather, and finished calf skins. A 2-5. 652
- 229 Forepaugh, W. F., & Bro., Philadelphia, Pa.**—Oak-tanned whole hides. A 1-4. 652
- 230 Leas, Wm. B. Shirley, Tannery, Philadelphia, Pa.**—Oak sole leather. A 1-4. 652
- 231 Hoffman, Jacob, Philadelphia, Pa.**—Oak sole leather. A 2-5. 652
- 232 Rosensteel, W. H., Johnstown, Pa.**—Union crop leather. A 1-7. 652
- 233 Hardenburgh, Elmore, & Co., English Centre, Pa.**—Sole leather. A 1-5. 652
- 234 Howard, J. H., & A. P., Corry, Pa.**—Hemlock sole leather. A 1-5. 652
- 235 Greenawalt, J., & J. K., Harrisburg, Pa.**—Oak sole and upper leather, calf, kip, and harness. A 2-6. 652
- 236 Wilkinson, J. P., & Bro., Unionville, Pa.**—Oak sole and harness leather. A 2-7. 652
- 237 Underhill & Noble, Athens, Pa.**—Hemlock sole leather. A 1-7. 652
- 238 Ray, Daniel P., sr., Tyrone, Pa.**—Union crop sole leather. A 2-7. 652
- 239 Webb, Wm. B., Frankford, Pa.**—Leather aprons for worsted machinery, picker, band, and lace leather. A 2-7. 652
- 240 Bechtel, John A., & Son, Newport, Pa.**—Oak sole leather. A 2-6. 652
- 241 Mosser & Keck, Allentown, Pa.**—Union crop backs. A 2-7. 652
- 242 Geneseman, Miller, & Co., Pinegrove, Pa.**—Oak slaughter sole leather. A 2-7. 652
- 243 Rippman, C. A., Newport, Pa.**—Slaughter sole and rough skirting leather. A 2-7. 652
- 244 Kerper, Henry, Reading, Pa.**—Oak sole leather. A 2-7. 652
- 245 Bare, John, Baltimore, Md.**—Union crop sole leather. A 2-7. 652
- 246 Baer, Arthur P., & Co., Schlosser Tannery, Baltimore, Md.**—Chestnut oak sole leather. A 2-4. 652
- 247 Deford & Co., First National and Battle Run Tanneries, Baltimore, Md.**—Slaughter sole leather. A 2-4. 652
- 248 Appold, Geo., & Sons, Baltimore, Md.**—Slaughter oak sole leather. A 2-4. 652
- 249 Smith, Elliot, & Co., Baltimore, Md.**—Oak sole leather. A 2-3. 652
- 250 Decker, David, Wellsbury, N. Y.**—Union back sole leather. A 2-4. 652
- 251 Palmer & Decker, Elmira, N. Y.**—Union back sole leather. A 2-4. 652
- 252 Kinley, Adam, Breesport, N. Y.**—Union crop sole leather. A 2-5. 652
- 253 Osterhout, W. H., Ridgway, Pa.**—Hemlock sole leather. A 1-8. 652
- 254 Wilcox Tanning Co., Wilcox, Pa.**—Hemlock sole leather. A 1-8. 652
- 255 Innes, Adam, Granville Centre, Pa.**—Union slaughter backs sole leather. A 1-8. 652
- 256 Innes, Adam, Grovers, Pa.**—Crop sole leather. A 1-8. 652
- 257 Childs & Bloomer, Nicholson, Pa.**—Slaughter crop sole leather. A 1-8. 652
- 258 McKenstry & Childs, Schultsville, Pa.**—Slaughter crop leather. A 1-8. 652
- 259 Hoyt, J. B., & Co., New York, N. Y.**—Oak-tanned leather belting. A 1-4. 652
- 260 Hoyt Brothers, New York, N. Y.**—Hemlock sole leather. A 2-7. 652
- 261 Brown, E. T., & Co., Luzerne Tannery, New York, N. Y.**—Union crop sole leather. A 2-4. 652
- 262 Lee, W. Creighton, Salladaybush and Tioga Tanneries, New York, N. Y.**—Hemlock sole leather. A 1-7. 652
- 263 Hubbard & North, Oswego, New York, N. Y.**—Hemlock sole leather. A 1-6. 652
- 264 Wells, Henry F., Germania Tannery, Ludington, N. Y.**—California hemlock sole leather. A 1-6. 652
- 265 Kenyon, J. A., & Co., Trout Creek Tannery, Cannonville, N. Y.**—Texas hemlock sole leather. A 1-6. 652
- 266 Bulkey, J. E., & Sons, New York, N. Y.**—Hemlock sole leather. A 1-8. 652
- 267 Horton, G. B., & Co., New York, N. Y.**—Hemlock sole leather. A 1-7. 652
- 268 Lapham, H. G., Tunkhannock Tannery, Tunkhannock, Pa.**—Union back sole leather. A 2-4. 652
- 269 Rockwell Bros., Clarendon Tannery, Warren, Pa.**—Hemlock sole leather. A 1-7. 652
- 270 Costello, P. & P., Camden Tannery, Camden, N. J.**—Hemlock sole leather. A 1-7. 652
- 271 Beach & Dodge, Harrisville, Lewis Co., N. Y.**—Hemlock sole leather. A 2-7. 652

SPECIAL BUILDINGS.

Leather.

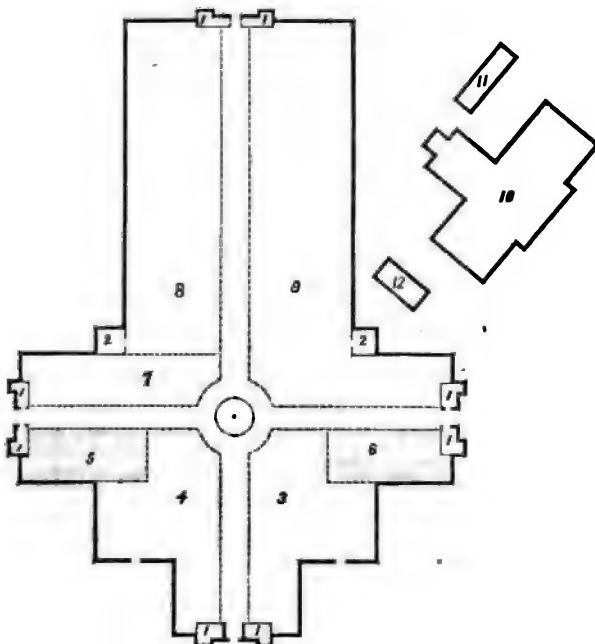
- 272 Adams & Shaler, New York, N. Y.**—Sole leather. A 1-8. 652
273 Thomas Extract Co., Elmira, N. Y.—Sole leather. A 2-5. 652
274 Perry, F. H., & Co., Limestone, N. Y.—Hemlock sole leather. A 1-7. 652
275 Lampert, Henry, Rochester, N. Y.—Sole and upper leather. E 2-9. 652
276 Devereaux, A., & Son, Deposit, N. Y.—Hemlock sole leather. A 1-5. 652
277 Spaulding, Edward, Boston, Mass.—Hemlock sole leather. A 1-5. 652
278 Poor, Henry, & Son, Boston, Mass.—Hemlock sole leather. A 1-5. 652
279 Procter, Thos. E., Boston, Mass.—Hemlock sole leather. A 1-5. 652
280 Fairbrother, H. L., & Co., Pawtucket, R. I.—Belting lace and hame string leather. A 1-4. 652
281 Jewett & Keating, Buffalo, N. Y.—Hemlock sole leather. A 1-6. 652
282 Williams, C. H., & G. L., Buffalo, N. Y.—Hemlock sole leather. A 1-6. 652
283 Rumsey, A., & Co., Buffalo, N. Y.—Hemlock sole leather. A 1-6. 652
284 Gardner, N. H., & Co., Buffalo, N. Y.—Hemlock sole leather. A 1-6. 652
285 Schoellkopf, J. F., & Son, Buffalo, N. Y.—Hemlock sole leather. A 1-6. 652
286 Rose, Adolf, Buffalo, N. Y.—Hemlock sole leather. A 1-6. 652
287 Bush & Howard, Buffalo, N. Y.—Hemlock sole leather. A 1-6. 652
288 Nepper, E. & D., Cincinnati, Ohio.—Oak sole leather. A 2-5. 652
289 Elasar & Prity, Cincinnati, Ohio.—Oak sole leather. A 2-5. 652
290 Ballauf, Lewis, Cincinnati, Ohio.—Oak sole leather. A 2-5. 652
291 Steigler, A., & Co., Cincinnati, Ohio.—Oak sole, harness, and skirting leather. B 2-4. 652
292 Kessler, Henry, Cincinnati, Ohio.—Oak sole and harness leather. A 2-5. 652
293 Lang & Wanner, Cincinnati, Ohio.—Oak sole and harness leather. A 2-5. 652
294 Bardes, Louis C., Cincinnati, Ohio.—Harness leather. B 2-4. 652
295 Lawrence, John H., Cincinnati, Ohio.—Skirting, calf, seating, and bridle leather. A 2-5. 652
296 Martin & Riedle, Cincinnati, Ohio.—Russel leather. B 2-11. 652
297 Freiberg, Henry, Cincinnati, Ohio.—Harness leather. B 2-11. 652
298 Woolley, R., & Son, Cincinnati, Ohio.—Harness, black bridle, and black line leather. B 2-11. 652
Harness, Kip, and Calf.
299 Grotzinger, A. & J., Alleghany City, Pa.—Oak sole leather. A 2-4. 652
300 Alexander, E. H., Alleghany City, Pa.—Imitation French calf and kip skins. B 2-13. 652
301 Woelfel, Fred'k, Alleghany City, Pa.—Harness leather. B 2-12. 652
302 Kiefer, Stiefel, & Co., Alleghany City, Pa.—Harness leather. B 2-12. 652
303 Holstein, A., Alleghany City, Pa.—Harness leather. B 2-5. 652
304 Lappe & Hax, Alleghany City, Pa.—Harness leather. B 2-5. 652
305 Lappe, J. C., Alleghany City, Pa.—Harness leather. B 2-5. 652
306 Callery, Jas., & Co., Pittsburgh, Pa.—Harness and saddlers' leather. B 2-5. 652
307 Braun, Frederick, Philadelphia, Pa.—Calf and kip skins. B 2-13. 652
308 Ludy, C., & Sons, Philadelphia, Pa.—Finished oak calf skins. B 2-13. 652
309 Wensley, Jas., Philadelphia, Pa.—Shoe uppers. B 2-13. 652
310 Schuman, F., & Son, Philadelphia, Pa.—Calf and kid leather. B 1-6. 652
311 Chambers, Edwin, West Chester, Pa.—Finished calf skins. B 2-6. 652
312 Mardorf, C., Freeport, Pa.—Harness, calf, veal kip, and upper leather. B 2-13. 652
313 Hollinger, Amos, Lancaster, Pa.—Oak harness leather. B 1-4. 652
314 New York Manufacturing Leather Co., New York, N. Y.—Leather cloth for upholstering and carriages. B 2-5. 652
315 Moffat, David, & Co., New York, N. Y.—Oak-tanned harness leather. B 2-7. 652
316 Michel, A. M., New York, N. Y.—Buff, grain, and calf skins; harness leather; boots and shoes. B 2-5. 652
317 Brown, Elijah T., & Co., New York, N. Y.—Finished calf skins. B 2-12. 652
318 Shattuck & Binger, New York, N. Y.—Tanned alligator skins, black and colored. B 2-12. 652
319 Studwell, Sanger, & Co., New York, N. Y.—Imitation goat, splits and buff; finished calf, russet and union backs. B 2-12. 652
320 Haubner & Heller, New York, N. Y.—Finished calf and kip skins. A 2-3. 652
321 Thomas Extract Co., Elmira, N. Y.—Leather tanned with hemlock extract solely, also in combination with other materials. B 2-12. 652
322 Weed, J. B. & F. M., & Co., Binghamton, N. Y.—Imitation goat, split, kip, and harness leather. B 2-12. 652
323 Miller, J. & J., & Co., Boston, Mass.—Hemlock extract and leather tanned by same. B 2-2. 652
324 Osborne, F., jr., & Co., Boston, Mass.—New Orleans kip leather, plain and buffed. B 2-2. 652
325 Butler, Dunn, & Co., Boston, Mass.—Buff leather made from slaughter hides. B 2-1. 652
326 Thompson, B. F., & Co., Boston, Mass.—Buff, imitation goat and split leather. B 1-1. 652

Leather.

- 327 Cummings, John, & Co., Boston, Mass.**—Imitation goat, polish grain, calf, split, and buff leather. B 2-2. 652
- 328 Guild, Josiah F., Boston, Mass.**—Pebble grain, imitation goat, buff, and split leather. B 2-9. 652
- 329 Procter, Thomas E., Boston, Mass.**—Curried leather and splits. B 2-8. 652
- 330 Way, John S., & Co., Bridgeport, Conn.**—Leather, buffalo robes. B 2-12. 652
- 331 Zipp, Philip C., Baltimore, Md.**—Calf, kip, and grain leather. B 2-6. 652
- 332 Appold, George, & Sons, Baltimore, Md.**—Chestnut, oak-tanned calf skins. B 2-4. 652
- 333 Sharp, Tudor, & Co., Baltimore, Md.**—Oak buff upper leather, and rough skirting. A 2-7. 652
- 334 Cunningham & Co., Nashville, Tenn.**—Oak harness and rough leather. B 2-1. 652
- 335 Trostel & Gallum, Milwaukee, Wis.**—Harness, upper, and split leather, and calf skins. B 2-8. 652
- 336 Wisconsin Leather Co., Milwaukee, Wis.**—Harness, wax upper, and split leather. B 2-5. 652
- 337 National Leather Co., Detroit, Mich.**—Whip, lace, and upper leather, calf skins and robes. A 2-2. 652
- 338 Weil, J., & Bros., Chicago, Ills.**—Upper, harness, kip, and calf leather. B 2-8. 652
- 339 Walker, Oakley, & Co., Chicago, Ills.**—Wax calf union tannage, imitation goat grains, wax upper, card leather. B 2-8. 652
- Morocco and Sheep.**
- 340 Foster, A. J., & Co., Boston, Mass.**—Grain leather, goat and sheep skins. B 2-14. 652
- 341 Ely, Henry G., & Co., New York, N. Y.**—Imitation goat pebbled leather, finished wax-split leather. B 2-14. 652
- 342 Rockwell, J. S., & Co., New York, N. Y.**—Sheep leather. B 1-16. 652
- 343 Guion, Geo. G.—New York, N. Y.**—Morocco leather. B 1-7. 652
- 344 Howell, T. P., & Co., Newark, N. J.**—Harness, patent, Russia, and pocket-book leather, sheepskin mats, and roans. B 1-8. 652
- 345 Meyer, Richard, New Durham, N. J.**—Buck skins. B 1-14. 652
- 346 Pusey, Scott, & Co., Wilmington, Del.**—Kid, straight-grain pebbled, and French morocco. B 2-7. 652
- 347 Jones, Wm., & Co., Wilmington, Del.**—Morocco leather. B 2-14. 652
- 348 Bush, Wm., & Co., Wilmington, Del.**—Morocco leather. B 1-8. 652
- 349 Larrabee, E., & Sons, Baltimore, Md.**—Colored roans and linings, buff splits and wax uppers. B 1-15. 652
- 350 Wentz & Clark, Philadelphia, Pa.**—Morocco leather. B 1-14. 652
- 351 Bockius, Geo., Philadelphia, Pa.**—Morocco leather. B 1-5. 652
- 352 Wood, Geo., Philadelphia, Pa.**—Morocco and sheep leather. B 1-13. 652
- 353 Schollenberger, Wm., & Sons, Philadelphia, Pa.**—Calf, kid, sheep alum, and roan leather; satchels, pocket books, and fancy leather goods. B 1-12. 652
- 354 Amer, Wm., & Co., Philadelphia, Pa.**—Morocco leather. B 1-4. 652
- 355 O'Callaghan, Francis O., Philadelphia, Pa.**—Skivers and sheep skins. B 1-13. 652
- 356 Hummel, G. W., & Co., Philadelphia, Pa.**—Morocco leather. B 1-12. 652
- 357 McNeely & Co., Philadelphia, Pa.**—Morocco leather, sheep skins, and skivers. B 1-4. 652
- 358 Adams & Keen, Philadelphia, Pa.**—Morocco and kid leather. B 1-14. 652

THE UNITED STATES GOVERNMENT'S BUILDING.

Scale, 150 ft. to 1 in.



- 1. Offices.
- 2. Water-closets.
- 3. War Department.
- 4. Navy Department.
- 5. Post Office.
- 6. Treasury Department.
- 7. Agricultural Department.
- 8. Interior Department.
- 9. Smithsonian Institution and Food Fishes.
- 10. United States Hospital.
- 11. Tent.
- 12. Laboratory.

Total Length, 504 ft. Width, 360 ft. Height, 50 ft.

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Late Principal Examiner, U. S. Patent Office.

M. B. PHILIPP,
Late Examiner of Interferences, U. S. Patent Office.

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WM. A. DECAINDRY, Secretary of the Board.

UNITED STATES GOVERNMENT BUILDINGS.

MAIN BUILDING, No. 100.

Architect, JAS. H. WINDRIM.—Size, Floor Area, 102,840 sq. ft.

This structure is situated at the intersection of Belmont and Fountain Avenues, is built in the form of a Latin cross, and is of framed white pine, unplanned, with two tiers of windows. It contains for exhibition contributions from the different Executive Departments of the United States Government.

SPECIAL BUILDINGS.

ORDNANCE LABORATORY BUILDING, NO. 102.

Architect, Col. T. T. S. LAIDLEY, Ordnance Corps, U. S. A.—Size, 53 ft. x 23 ft.

This building is located north of Main Building, and is built of wrought iron, riveted, covered with a light casing of wood. It is designed with the view of preventing the great loss of life that usually results from the demolition of a building of ordinary construction, by the explosion of even a small amount of powder. In the event of an explosion in this building, the roof and sides fall at once, and the iron frame is left standing, in order to shield the inmates from being crushed beneath the ruins. The building, as well as its contents, is on exhibition.

UNITED STATES ARMY POST HOSPITAL, NO. 101.

Size, 35 ft. x 39 ft., and Addition of 40 ft. x 14 ft.

This Hospital is situated north of the Main Building, is two stories in height, and is intended to hold twenty-four beds. It is built of wood, and contains medical appliances of all kinds, including medicines, instruments, hospital stores, clothing, books, and furniture, models of hospitals, cars, boats, ambulances, etc., microscopical and other specimens. The construction of the building and its contents are on exhibition.

TRANSIT OF VENUS BUILDINGS, NO. 104.

This structure is situated southwest of Government Building, consisting of,—

1. Transit House.—Dimensions, 10 ft. x 8 ft.
2. Photographic House.—Dimensions, 12 ft. x 10 ft.
3. Equatorial House.—Dimensions, 11 ft. in diameter.

All the instruments employed in observing and recording the phenomena of the late transit of Venus are so placed on exhibition that the various processes will be exemplified by practical workings.

WAR DEPARTMENT.

Signal Section.

SIGNAL SECTION.

The instruments exhibited in the Signal Service Section of the United States Army are all of American manufacture, and only such as have been devised for the signal service of the army by officers or enlisted men of the corps.

METEOROLOGICAL INSTRUMENTS.

The display of self-recording instruments consists of barographs, anemographs, thermographs, rain-gauges, and evaporator. Some of these are worked by electrical batteries, others by mechanical means. Those recording the velocity and direction of the wind, the amount of rainfall and changes of temperature, are connected with their respective wind-cups, wind-vanes, rain-receivers, and thermometers, exposed upon an artificial glass roof, beneath which the recording apparatus is placed, each electrical instrument having its own battery. Artificial currents of air and water are used to obtain uninterrupted working.

UNITED STATES SIGNAL STATION.

This department consists of a model United States signal service station, similar to those established in different sections of the United States. Here are exhibited the meteorological instruments used on station; the manner

of taking, recording, and transmitting to the central office at Washington the observations upon which the weather reports, storm warnings, etc., are based; the method of publishing and distributing the predictions forwarded from the office of the Chief Signal Officer of the army, as well as the various means adopted to furnish at the earliest practicable moment all weather information which would be of benefit to commerce and agriculture. Specimens of the publications, charts, and maps of the office of the Chief Signal Officer are also exhibited.

PRINTING DEPARTMENT.

Here are exhibited in detail the printing of "weather maps" and "farmers' bulletins."

FIELD WORK.

This portion of the exhibition comprises a complete United States field-telegraph train, with capacity to erect 50 miles or more of portable telegraph line; portable signal tower 75 feet high, with its wagon; semaphore, signal flags, torches, rockets, bombs, and mortars, colored lights, heliographs (for communicating by means of sun flashing), and international flags, and other apparatus used in communicating with troops in the field or with vessels.

Quartermaster, Medical, Engineer Sections.

MODEL DEPARTMENT.

The model department comprises models of the different instruments used in field signaling, models of station meteorological instruments and portable instrument shelter, and a new electrical instrument for transmitting by telegraph the isobarometric and isothermal lines of the Signal Service weather maps.

QUARTERMASTER SECTION.

Uniforms.—Revolutionary uniforms, and those of succeeding years; present uniforms of the army.

Camp and Garrison Equipage.—Tents, flags, cooking utensils and tools; field music—drums, bugles, etc.; bunks, blankets, and bedsacks.

Means of Transportation.—Wagon and harness; ambulance and harness; aparajo; pack saddle; historic wagon; portable and traveling forges.

Machines.—For cutting out clothing; for brass screwing shoes; for testing fabrics.

F farriers' and Saddlers' Tools.

Standard Horse Shoes.

Veterinary Chest.

Kiernan's System of Horse Shoeing.

MEDICAL SECTION.

This display represents the character of the work of the medical staff of the United States army in peace and war. Four classes of objects are exhibited by the objects themselves, by models, or by photographs.

1. Hospitals for Sick and Wounded Soldiers.

a Post hospital of 24 beds of full size.

b Four full-sized hospital tents, with furniture representing the tent ward which served as the unit of the "tent field hospital" used during the civil war of 1861-65.

c Models of the barrack "General Hospital" used during the war of 1861-65, viz.: a model of the form of barrack ward for 60 beds, on the scale of half an inch to the foot; and four ground-plan models showing combinations of such wards in general hospitals.

2. Medical and Hospital Supplies.

Samples of articles on the medical supply table of the army; medicines; hospital stores; surgical instruments and dressings; hospital furniture, bedding, clothing, and appliances; books, blank forms for reports, and stationery; medical panniers and medicine wagons, and samples of the artificial arms, legs, trusses, and other apparatus issued by the medical department to disabled soldiers.

3. Transportation of Sick and Wounded.

Stretchers, litters, and ambulances, full size and models; models of hospital railroad cars, hospital steamboat, and hospital ocean steamship, illustrating mode of transporting sick and wounded during the late war.

4. Treatment of Diseases and Injuries of Soldiers.

Army medical museum, represented by medical, surgical, anatomical, and microscopical specimens, photographs of specimens, and catalogue of museum; catalogue of Surgeon-General's office; photographed title pages of rare books on military medicine and surgery, etc.; medical and surgical publications of Surgeon-General's office.

The Post Hospital, for twenty-four beds, constructed from plans approved by the War

Department, contains the greater part of the display of the Medical Department, as follows:

Room 1, 45x25, a ward with twelve beds, furniture, bedding, clothing, etc.

Room 2 (the other ward, same size), models of hospitals, ambulances, hospital cars, boats, and ships, specimens from museum, etc.

Room 3, the dispensary, samples of medical supplies.

Room 4, the office, samples of surgical instruments, medical and surgical books, blanks, etc.

Room 5, dining room, table ware, meal furniture.

Room 6, kitchen, cooking apparatus.

Room 7, office of officer in charge of the display.

Rooms on second floor, stretchers, litters, medicine chests, and panniers; artificial legs and arms, trusses for rupture, and other apparatus.

Tent ward, full-sized hospital tents, pitched in the rear of the post hospital.

Ambulances, medicine wagons, and carts, full-sized, parked near the tent ward.

ENGINEER SECTION.

Maps and Drawings.

Map of the United States, showing work done by corps of engineers, 1776-1876.

Drawing of Rock Island bridge.

Map of canal and locks, Des Moines rapids, Map of Mississippi river, from Le Claire, Iowa, to Rock Island, Illinois.

Drawings of improvements of Mississippi river between mouths of the Illinois and Ohio.

Plans of improvements on Hudson river, near Albany.

Drawing of iron landing pier, Delaware breakwater harbor.

Drawing of foundation of Fort Delaware.

Drawing of dynamometer for determining force required to screw down iron piles of Levee pier.

Drawing of Delaware breakwater, with details of breakwater and ice barrier.

Map of shore of Delaware harbor, including Cape Henlopen.

Chart of Schuylkill river, from mouth to Chestnut Street bridge, showing improvements made by United States in its navigation from 1870 to 1875.

Drawing of dredge-boat "Henry Burden."

Drawing of mortar mill and concrete mixer. Map of flood plain of Minnesota and Mississippi rivers, showing connection with basin of Red River and Lake Winnipeg.

Drawings of snag boat.

Chart of Galveston entrance.

Detailed drawings and photographs, illustrating experimental works at Galveston entrance.

Chart of Indianola harbor.

Detail drawings of end dock.

Charts of Lake Survey.

Lighthouse drawings, Eleventh district.

Drawing of river and harbor works.

Plans of cribs and pile pier at Chicago. Maps and hydrographs of Ohio, Monongahela, and Great Kanawha rivers.

Drawings of crib work for piers on Lake Ontario.

Special map of region west of Mississippi river.

Special triangulation map of region west of Mississippi river.

Detailed topographical sheets of above region.

Specimen copies of photolithographic views.

SPECIAL BUILDINGS.

Engineer, Ordnance Sections.

crayon topographical atlas, and geological atlas.

Models of Harbor Improvements.

Work at Hallett's Point, N. Y. (Hellgate.) Northern extremity of Cape Cod. Section of iron landing pier of Delaware breakwater harbor.

Iron ice barrier proposed for Horse Shoe of Delaware river.

Breakwater at Dunkirk, N. Y.

Crib and lighthouse on Spectacle reef, Lake Huron.

Angle crib and lighthouse at Harbor of Refuge, Lake Huron.

Model showing shore lines and breakwater at Harbor of Refuge, Lake Huron.

Crib and pier at Chicago, Illinois.

Crib work for piers on Lake Ontario.

"Mattress" or "apron" used in improvements of harbor at mouth of Cape Fear river, N. C.

Models of Machinery and Appliances.

Steam drilling scow.

Capstan-head and machinery for screwing down iron piles at Delaware breakwater landing pier.

Derrick for landing shafts.

Eccentric clamp or "nipper" for sustaining piles.

Snag boat, showing hull.

Dredge-boat "McAlester."

Large grapple.

Photographs.

Views of Hallett's Point, N. Y.; snag boat; Red river; cribs and piers at Chicago, Ill.; country west of Mississippi river (Wheeler expedition).

Materials, Specimens, and Samples.

Specimens of borings at site of landing pier of Delaware breakwater; of iron used in construction of landing pier; of timber piles taken from between tides at Reedy Island; ice barrier; of building stone, concrete, and woods, collected from various parts of the United States; of fossil trees; of large cypress stump, taken from mouth of Cape Fear river, N. C.

Miscellaneous.

United States bridge equipage, pontoon wagons, loaded; tool wagon; forge; model of bridge train, wagons, and loads; reserve and advance guard bridges; siege and mining tools; field photographic outfit; reconnaissance instruments; bridge model; models of torpedoes; models of apparatus for measuring subaqueous explosions, in glass tank; torpedoes, full size, models, 1874-75; ground mine; cable stop; junction boxes; torpedo cables, multiple and single; operating box; electrical apparatus used with torpedoes; iron plate from torpedo target, showing effects of thirty pounds of dynamite exploded under water at thirty feet distance; models of King, De Russy, and Hunt self-depressing gun carriages; models of mortar carriage and muzzle-pivoting gun carriage; surveying, astronomical, and barometrical instruments for field work; publications of the engineer bureau.

ORDNANCE SECTION.

Sea Coast Guns.

20 in. Rodman gun, on carriage and chassis, with hydraulic buffer, on platform; implements.

19 in. Thompson b. l. rifle, experimental, under Lairdley's gun lift.

9 in. Sutcliffe b. l. rifle, experimental, on carriage and chassis, with Sinclair's friction-brake, mounted on platform; implements.

10 in. Woodbridge gun, experimental; in slings, under Lairdley sling cart.

8 in. m. l. converted rifle, experimental, on 10 in. casemate carriage and chassis, with pneumatic buffers, mounted on platform in model of casemate; implements.

Mann's 8 in. b. l. rifle, wrought iron, experimental, mounted on top carriage and chassis.

8 in. siege howitzer, mounted on wooden siege carriage.

Siege Guns.

4.5 in. siege rifle gun, mounted on Benton's experimental iron siege carriage, with limber; implements.

Field Guns.

Light 12 pdr. gun, 4.6 in. wooden carriage, with limber; implements.

Sutcliffe 3.9 in. b. l. rifle, experimental.

Hotchkiss 3.9 in. b. l. rifle, experimental.

Moffat 3.15 in. b. l. rifle, experimental.

Mann's 3 in. b. l. rifle, experimental.

3 in. wrought iron, m. l. rifle, mounted on Benton's experimental iron 12 pdr. field carriage, with limber and caisson; implements; model horse harnessed to limber, with mounted driver.

10 pdr. Parrot rifle, mounted on Watervliet arsenal experimental iron field carriage, with limber.

3 in. Whitworth field piece, on carriage.

2.5 in. Woodbridge gun, experimental; fired 1327 times.

Hotchkiss field cannon, experimental.

Rebel b. l. pieces, field and boat, experimental skids.

Lyman's multicharge rifle, cal. 6 in., experimental skids.

Bomford and Wade perforated gun, experimental; used to determine experimentally exterior lines of heavy cannon, by means of pressure at different points of bore.

Mountain howitzer, mounted on carriage.

Mountain howitzer battery, on stands.

Volley and Repeating Guns.

Gatling gun, short barrel, cal. 45, on cavalry carriage; model horse in harness.

Hotchkiss revolving cannon, on carriage, experimental.

Union repeating (coffee-mill) gun, on carriage, experimental.

Regua battery, on carriage, experimental.

Guthrie & Lee gun, on carriage, experimental.

Vandenburgh volley gun, on carriage, experimental.

Revolutionary Guns.

6 pdr. French guns, bronze, presented by Lafayette; forming enclosure around models of modern gun plant.

12 pdr. siege gun, bronze, mounted on wooden carriage, with limber.

8 in. howitzer, bronze, mercer.

24 pdr. howitzers, Byer's; cast in Philadelphia.

Anthony Wayne howitzers, intended to be used on horseback; cast in Germantown, Philadelphia, by D. King.

Mortars.

13 in. sea-coast mortars, on bed, with centres, pintles, chassis mounted, on platform; implements.

24 pdr. Coehorn mortars, on beds.

Carriages.

New cavalry forge cart.

Projectiles.

Shot, shells, grape, canister, etc., for vast our weapons and calibres; smooth-bored and rifled; fired and unfired; hand-grenade,

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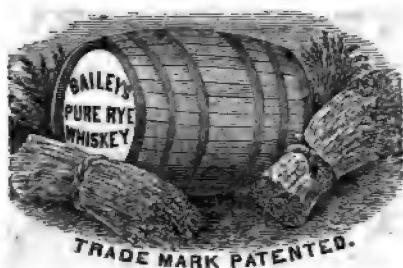
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Small Arms.

Historical collection of muzzle-loaders, wall-pieces, muskets, musketoons, rifles, pistols, flintlocks, percussion, breech-loaders, fixed and movable chambers, revolvers, tip-up barrels, needle guns, cylindered, magazine, chassepot, repeating, coffee-mill, drop-lever, slap-over guns, American and foreign.

Bayonets, blades, knives, swords and scabbards, lances, pikes, halberds, cleaning appliances, etc.

Accoutrement.

Sets of infantry, cavalry, and artillery equipments; cartridge boxes, canteens, metal work on scabbards, etc.; powder horns and flasks, cartridges, and cases of various materials and calibres; primers, locks, fuses; cartridge-making machinery.

Models.

Minute man.

Rifle private, full dress, Hall breech-loading rifle, 1818.

Private, mounted rifles, Mexican War, 1845.

Infantry private, 1858-1860, regulation equipment.

Cavalry private, 1865, Spencer, Mann's equipment.

Infantry man, full dress, 1876.

Infantry man, marching outfit, 1876.

Cavalry man, present, full dress, 1876.

Light-artillery man, full dress, 1876.

Horse, carved in wood, for cavalry equipment.

Horse, carton pierre, for artillery harness.

Horse, stuffed, for Gatling cart.

Rock Island Arsenal, Illinois, in photograph.

Hitchcock gun-plant, with gun in sections, with set test specimen Hitchcock gun material, showing tensile and torsional strength; sample forging-disk; Dank's iron bloom; Graff, Bennett, & Co., Hitchcock's gun materials; long turnings H.G. material; and thin turnings H.G. material.

Rodman gun-plant, with specimen, showing tensile compression and torsional strength of the American cast-iron used in Rodman gun.

Woodbridge gun, with set specimens, showing tensile strength of Woodbridge gun construction; reel-wire for Woodbridge gun; and half-ring, bronzed, Woodbridge gun.

Cast of bore in gutta-percha of 8 in. m. l. converted rifles, with centres for same on trestles.

Glass-case specimens, containing small models, relics, etc.

Tree, cut in two by musketry at the battle of the Wilderness, Va.

Boards of component parts of small arms, and progressive work on scabbards.

Rodman guns, mounted in barbette and in casemate.

Mortar, mounted on bed with centre pintle chassis.

Table with models, field and siege carriages.

Lead-bullets, joined together by collision in mid-air at the battle of Petersburg, Va.

Machines.

Casemate gin; Baxter engines.

Cartridge Machinery.

Portable gas furnace for annealing cartridge shells; double-action press; drawing presses; case and cup anvil trimmers; header; primer; cup venting, and impression machines; bullet, ball-trimming, and greasing, tapering, and loading machines; cup anvil press; rotary fan; packing tables and work boxes.

Gun-making Machinery.

Drop hammer; forge; trimming jumper; barrel-boring lathe, for nut boring and quick boring; barrel-turning lathe; straightening stand; polishing stand; vises, with machine for bending swivels; trimming press; drill press; rifling, brush, and profiling machines; milling and screw machines; clamp milling machine; machine for bending swivels; grinding stone; engine lathe; emery mill grinder; second drilling receiver; first turning stock; lock-bedding with post and spare pulley; air pump and reservoir; bench for assembling guns.

Instruments.

Laidley laboratory, showing principles of construction, and illustrating experiments in ballistics; models pressure; pendulum eprouvette; camera lucida for representation with model of Frankford target; Shultz chronoscope, with Russel's interrupter; vignetti machine; Le Boulangé chronograph; Benton thread, and electro-ballistic machines; target for electro-ballistic machines; recoil dynamometer; mercurial densimeter; scales for mercurial densimeter; stereometer; collection of inspecting instruments for cannon and projectiles for 3 in. rifle and 15 in. gun; iron tube for firing through with safety; firing stand.

Miscellaneous.

Boards showing rifle practice.

Publications from ordnance office and artillery school.

Medal, army target practice; stadia, silver (1 cavalry, 1 infantry); telemetres (1 battery, 1 infantry, and 1 field).

Corrugated iron powder barrels; copper powder barrel.

NAVY DEPARTMENT.

ORDNANCE BRANCH.

Rifled and Smooth Bore Guns.—15 in. guns on Ericsson's and Edes's steam carriages.

[These two guns are mounted on a circular platform and inclosed in a wooden turret, representing in size and form a monitor's iron turret.]

Pieces of heavy ordnance, muzzle and breech loading, of antiquated styles and manufacture.

Guns from 11 in. to 3 in. calibre, and 100 prds. to 12 prds., variously mounted.

Torpedoes.—Automatic, stationary, and movable; electric batteries, wires, fuses, etc.;

illustrating progress made by the torpedo school.

Small Arms.—Muskets, rifle and smooth bore, breech- and muzzle-loading; pistols, swords, cutlasses, bowie knives, battle axes, tomahawks, boarding helmets, etc.

Ordnance publications.

Samples of gunpowder.

Inspecting instruments for heavy guns; implements for gauging and inspecting shot and shell.

Fuse presses; machines for making percussion caps; metallic cartridges; solid head metallic musket and pistol cartridge now used in the navy, showing the different stages of

SPECIAL BUILDINGS.

Navigation, Observatory, Docks, Engineering, Etc.

manufacture; other musket cartridges and cartridge inventions in possession of the navy.

Rifle projectiles for heavy guns; inventions of Dahlgren, Holroyd, Dana, Parrot, Hotchkiss, James, Brooks, and other inventors.

Sub-calibre and elongated projectiles for smooth bore guns; solid shot, shell, incendiary shell, grape, canister, shrapnel, as used at present, and as previously used or proposed.

Projectiles which have been fired at iron targets; models of projectiles; model gun-carriages; war rockets, hand grenades; leather work of navy ordnance; sponges, rammers, and scrapers of different styles and inventions; fuses, cannon primers, and caps, cannon locks, night signals, impressions from guns, vent impressions; gun sights; breech, reinforce, and trunnion.

Figures of sailors, showing the dress and arms at different periods.

Miscellaneous articles and naval relics.

NAVIGATION BRANCH.

Navy bunting and navy flags, illustrating the present state of the bunting manufacture in the United States, as shown in the bunting made for the navy and known as "navy bunting," and also the mode of making flags by dyeing in pattern.

Bunting testing machine.

Navy sounding machines and auxiliary apparatus, showing the improvements in Sir William Thomson's sounding machine, and the various devices for detaching sinkers, and bringing up specimens of bottom, water, etc.

Navy signal apparatus, showing the colored lights (Coston's), with specimens.

Navy compasses and compass-testing instruments, showing specimens of the navy compass, azimuth circle, tell-tale, boat, and monitor compasses.

Portable compass-testing instrument, with specimens to illustrate development of the liquid compass.

Specimens of the old dry or air compass of American makers, illustrating the progress of improvement.

Adjustable binnacle.

NAVAL OBSERVATORY.

Publications.

Photographs of astronomical and other objects.

Chronometers.

Objects illustrative of American Arctic explorations.

Buildings and instruments used in the observations of the transit of Venus, December 8, 9, 1874.

HYDROGRAPHIC OFFICE.

Nautical charts, books, etc., published by the Hydrographic Office.

NAUTICAL ALMANAC OFFICE.

Publications of the office.

YARDS AND DOCKS BRANCH.

Plans of navy yards at Portsmouth, N. H.; Boston, Mass.; New York, N. Y.; Washington, D. C.; Norfolk, Va.; Pensacola, Fla., and Mare Island, Cal.

Plans of machinery at Boston navy yard; plans of dry docks at Boston, Mass., and Norfolk, Va.

Photographs of buildings, etc., at Portsmouth, N. H.; New York, N. Y.; Norfolk,

Va.; League Island, Pa.; Boston, Mass., and Mare Island, Cal.

Models of dry docks at Boston, Mass.; New York, N. Y.; Norfolk, Va., and Mare Island, Cal.

Pyramid of blocks of wood taken from naval vessels.

STEAM ENGINEERING BRANCH.

Machinery of the "Nipsic."

The machinery of the various sizes of steam launches.

The engines of the "Epervier."

Part of the original machinery of the torpedo boat "Spuiten Duyvel," a steam launch, with the first torpedo machinery used in the United States Navy.

Detail drawings of compound engines.

Photographs of machine shops, foundries, etc., showing improved tools used in the manufacture and construction of steam machinery.

Two compound boilers.

Baird's distiller, illustrating the method of making fresh water on board ship at sea.

EQUIPMENT AND RECRUITING BRANCH.

Young's ship's galley, with utensils for cooking for 500 men.

Hemp, manila, and wire rope; cable, blocks, chain cables, etc.

CONSTRUCTION AND REPAIR BRANCH.

Models of the "Constitution;" "Mississippi;" "Jamestown;" "St. Mary's;" "Portsmouth;" "Constellation;" "Niagara;" "Merrimac;" "New Ironsides;" "Hartford;" "Monitor;" "Kearsage;" "Vandalia;" "Constitution;" "President;" "Ohio;" "Enterprise;" "Washington;" and "Fulton."

Full-rigged model.

MEDICAL AND SURGICAL BRANCH.

Medicines and Hospital Stores used in the Navy.

Surgical instruments and appliances usually supplied in the service; additional case of surgical instruments occasionally supplied in lieu of the standard operation case.

Cots and stretchers for transportation of wounded in action.

Model of a sick bay; the part of the ship usually allotted for hospital accommodation.

Model of hospital ship.

Fan for ventilating the hold of a ship in hot climates.

Starting funnel arrangement for aerating distilled water.

Set of record and account books for a naval hospital.

Fracture bedstead, for elevating the patient and changing position.

Bed with woven wire mattress.

Photographs and plans of naval hospitals.

PAY, PROVISION, AND CLOTHING BRANCH.

Articles and materials of clothing issued in the navy.

Package, showing the manner of packing clothing for sea.

Navy rations in glass jars, and packages of the same as prepared for sea.

"Small stores," articles for mess use: pana,

Patents, Pensions, Lands, Indians, Education, Census.

spoons, knives, etc., tobacco, soap, needles, thread, and other small articles.

Packages of tobacco and soap as packed for sea use.

Paymasters' books and blanks for a ship with complement of 200 men; paymasters' sta-

tionery; stewards' stores, scales, and tools used in issuing provisions.

Iron safe; locks used on paymasters' store-rooms, three in number.

Specimen of candles.

TREASURY DEPARTMENT.

(Owing to want of sufficient appropriation by Congress for defraying the expense of the participation in the Exhibition by the Treasury Department, no definite arrangements have yet been made for contributions from it.—March 31, 1870.)

INTERIOR DEPARTMENT.

PATENT OFFICE.

Publications.—Annual reports; official gazette; indexes to patents, general and yearly; volumes of patents, monthly and weekly; decisions of Commissioner of Patents; mechanical dictionary; official classification.

Drawings of Models.—Selected series (6,000), intended to serve in the illustration of the Patent Office work, from the classes given below.

Models.—Selected series (5000), intended to serve in the illustration of the Patent Office work, from the following classes: agriculture; harvester; mills and presses; architecture; civil engineering; railways; navigation; metallurgy; metal working; wood working; steam; hydraulics; pneumatics; mechanical movements; hoisting; horse powers; journals and bearings; vehicles; fire arms; textile; printing and stationery; stone; clay; glass; leather; light; heat; electricity; household; chemistry; gas; ice, and fine arts.

Miscellaneous Collections of Interest.—The original Declaration of Independence; Gen. Washington's commission from the Continental Congress; personal effects of Gen. Washington, such as furniture, porcelain, clothing, cane, sword, traveling escritoire, surveying compass, camp equipage, including tent, mess-kit, money-chest, etc.

Weapons of historical interest, such as bayonets from General Braddock's line of march; muskets presented by the Emperor of Morocco to Mr. Jefferson; war saddle of Baron De Kalb; sabres of honor presented to United States officers by sovereigns and beys; model of invention by President Lincoln.

PENSION OFFICE.

Publications.—Annual reports; graphic illustrations; wall maps; wall charts; portfolios of diagrams, etc.; collections of historical interest; selections from the archives of the office relative to the Revolutionary war.

GENERAL LAND OFFICE.

Publications.—Annual reports; digests, and other documents.

Graphic Illustrations.—Maps, charts, and atlas of surveys; miscellaneous collections; instruments and processes employed in the land survey.

INDIAN OFFICE.

Publications.—Reports and other publications.

Illustrations.—Portraits, photographs, maps of reservations, etc.

Models.—Wigwams, communal houses, canoes, etc.

Miscellaneous Collection of Interest.—Costumes, male and female, adult and others; weapons of war and the chase; tents, wigwams, canoes, etc.; domestic utensils; specimens of food; toys, games, and festivals; arts and manufactures of the tribes; ethnological collections, etc.

EDUCATION OFFICE.

Publications by the Office.—Annual and special reports, and circulars of information.

Publications by other Offices or Persons.—Foreign reports on American education; foreign educational reports and documents; treatises on pedagogy; and educational journals.

Graphic Representations.—Wall maps and charts; portfolios of engravings, drawings, and photographs; busts; paintings, and other portraits.

Models of Educational Buildings.—The primitive log school-house; country school-house of to-day; city graded school-house; college buildings; details as to dormitories, ventilative apparatus, school-rooms, etc.; models of adobe and sod school-houses.

Specimens of School Furniture, Apparatus, and Text-books.—Historic collection, showing progress in text-books; specimens and models of school desks, seats, black boards, school maps, charts, etc.; specimens of modern slates, globes, natural history cabinets, chemical and philosophical apparatus, chemical appliances, etc.

Miscellaneous Collections of Interest.—Selected volumes of state and city educational reports; catalogues of private schools, academies, seminaries, colleges, and professional schools, selected series; catalogues and reports of orphan, reformatory, and charitable schools for the young, etc.; catalogues and reports of institutions for the deaf mute, blind, etc.; catalogues and reports of libraries; catalogues and reports of museums of art, of science, and of natural history.

These miscellaneous collections, some bound and others in their original condition, will be exhibited as showing specimens of the materials for the study of education, which are published by the systems and corporations themselves.

Volumes of manuscript returns made to the Bureau of Education by educators and school officials of every grade, and used in the preparation of its annual and special reports.

CENSUS OFFICE.

Publications.—Decennial censuses; statistical atlas, 1870.

SPECIAL BUILDINGS.

Surveys, Post-Office, Agriculture.

Graphic Illustrations.—Maps, charts, and diagrams.

Miscellaneous Articles of Interest.—Original schedules of the census of 1790; selected volumes of schedules of subsequent censuses.

GEOLoGICAL AND GEOGRAPHICAL SURVEY OF THE TERRITORIES.

1st Division.

Publications.—Reports, bulletins, etc.

Graphic Illustrations.—Topographical and geological atlases; wall maps and charts; panoramic photographs; stereoscopic views; photographic portfolios; photographic transparencies; paintings, landscapes, portraits, etc.

Models and Reliefs.—Topographical and geographical relief maps; relief sections; models of displacement; models of ancient

ruined cliff habitations; models of same restored.

Collections of Interest.—Geological and mineralogical cabinets; pottery, costumes, weapons, implements, toys, etc.

2d Division.

Publications.—Reports; bulletins; monographs, etc.

Graphic Illustrations.—Topographical and geological atlases; wall maps and charts; panoramic and stereoscopic views; portfolios, albums, and transparent photographs.

Models and Reliefs.—Topographical and geological relief maps; geological structural sections; models of displacement.

Miscellaneous Collections.—Geological and mineralogical specimens arms, clothing, etc.

POST-OFFICE DEPARTMENT.

The exhibition of this Department is classed under the following general heads:

A MODEL WORKING POST-OFFICE.

This is a branch office or station of the Philadelphia office, and shows the practical workings of the following divisions of this Department, viz.: Box and general delivery system; system of carrier delivery and collections; registered letter system; money-order system; foreign mail system, etc.

RAILWAY MAIL SERVICE DIVISION.

Two railway post-offices or postal cars, equipped with mail-bag catchers, and all other first-class appointments of that service, under charge of railway post-office clerks, by whom the mailing and distribution of outgoing mails is performed. Several models of mail catchers are also exhibited under this head.

Model mail cars,—small size,—exhibiting the practical working of the mail-bag catcher upon a miniature truck inside the building.

STAMPS, STAMPED ENVELOPE, AND POSTAL CARD DIVISION.

Machine in operation manufacturing stamped envelopes; machine in operation manufacturing postal cards; specimens of all stamps, stamped envelopes, and postal cards; specimens of registered-letter envelopes and post-office official envelopes; specimens of all United States post-office stamps and stamped envelopes, formerly used and now out of date.

MAIL EQUIPMENT DIVISION.

Leather pouches for letter mails; canvas bags for printed and miscellaneous matter; also registered-letter mail bags; mail locks, now in use; mail locks, out of use.

TOPOGRAPHICAL DIVISION.

Railway and general postal-route maps, and money-order office maps.

DIVISION OF BOOKS AND BLANKS.

Specimens of all books, blanks, etc., used by the Department; letter scales; marking and rating stamps.

AGRICULTURAL DEPARTMENT.

The exhibit from the Agricultural Department embraces as follows:

BOTANICAL DIVISION.

A collection of all the timber trees of the United States, in sections, showing interior and exterior surfaces; specimens of flowers, leaves, and fruits; herbarium specimens of grasses and other specialties.

STATISTICAL DIVISION.

Large outline maps of the United States, showing forest areas, extent, and value of farming lands, and amount of production, by counties; arrangement of charts and diagrams detailing amount of special products, by sections; statistics of farm animals, and illustrated statistics of industrial education; statistical album of miscellaneous details, with charts, diagrams, etc.

ENTOMOLOGICAL DIVISION.

Collections of fruit and vegetable models; "irids beneficial and injurious to farmers and

orchardists; poultry types, illustrated by stuffed specimens; collection of grains and cereals; collection of textile fibres of the United States, with specimens of their manufacture; specimens of tobacco, from different tobacco-producing sections of the United States; mounted collection of beneficial and injurious insects.

MICROSCOPICAL DIVISION.

Series of water-color drawings illustrating typical genera of microscopic fungi; preparations illustrating the characteristics of poisonous and edible mushrooms common to the United States; illustrations displaying the varied character of the starch granules of plants; drawings and illustrations explaining method of distinguishing vegetable and animal fibres, their kind and quality; drawings displaying vegetable and animal cellulose and starches, and illustrating methods of detecting them in organizations.

CHEMICAL DIVISION.

Fertilizers.—Mineral—including phos-

JOHN CLARK, JR. & CO.'S

MILE END, GLASGOW,

BEST

Six-cord Spool Cotton

ON BLACK SPOOLS,

IS UNRIVALLED

FOR

HAND AND MACHINE USE.

BRANCH AGENCIES:

58 Summer St., Boston, 535 Market St., San Francisco,

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THOMAS RUSSELL,

SOLE AGENT FOR THE U. S.

No. 19 Mercer Street, New York.

AGENCY IN CANADA:

BIRKS & WILSON, 1 ST. HELEN ST.,

MONTREAL.

HOMER BROOKE,

GLASS MOULD MAKER

1876—17 years located at—

Formerly of the J. C. Glass Works.

White, cor. Centre St.,

NEW YORK.

Every description of Moulds for making Blown and Pressed Glass and for
Casting Lead, Zinc, etc., made to order.

PRESSES MADE TO ORDER. CHUCKS FOR OVAL TURNING

THE PRACTICAL MOULD MAKER.

*Inventor and Patentee of the Processes and Machinery used in making Screw Glass Insulators
for Telegraph poles, now in use throughout the United States and other countries.*

Patents Jan. 25th, 1870, May 26th, 1874, Aug. 25th, 1874.

WM. BROOKE, Established 1850.

H. BROOKE, Successor, 1868.

COLBORNE BROOKES,

UNITED STATES, CANADIAN, and GENERAL

PATENT SOLICITOR,

CIVIL AND MECHANICAL ENGINEER, AND EXPERT,

No. 708 E STREET N. W.,

Opposite South Front of Post Office,

Address all letters
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CORRESPONDENCE SOLICITED.

BRANCHES IN ENGLAND, CANADA, FRANCE, BELGIUM, ETC., ETC.

Horticulture, Animals, Fish, Ethnology.

phates, apatite, coprolites, and all minerals—muck, peat, sea-weed, and other products of vegetable decomposition; animal—including guanos, bones, refuse from abattoirs, fisheries, oil manufactures, cancerine, etc.; agricultural products and materials obtained by chemical processes from flour, meal, bran, hominy; methods of preserving, etc., with special products of manufacture, viz.: starch, dextrine, sago, sugars, gums, glucose; products obtained by fermentation: wine, beer, ale, etc.; products of acetoous fermentations;

tanning materials of the United States: barks, leaves; tanning solutions, with modes of manufacture; dyes of the United States; resins and products of distillation of resinous materials; oils, vegetable, fixed, and others; products of milk, classified according to methods of production.

HORTICULTURAL DIVISION.

Specimens of economic and utilizable plants, showing methods of growth, culture, etc., grapes, cotton, tobacco, flax, broom corn, jute, corn, sorghum, yucca fibres, etc.

SMITHSONIAN INSTITUTION, AND COMMISSION ON AMERICAN FOOD FISHES.

The Smithsonian Institution makes the following exhibits:

Publications of the Institution.

Smithsonian contributions to knowledge; miscellaneous collections; annual reports, and other publications.

Meteorological work of the Institution: Charts showing the mean temperature, rainfall, and barometric pressure of the United States.

International exchanges; statistics of number of correspondents; extent of distribution by exchange.

General condition; financial statement.

COLLECTION TO ILLUSTRATE THE ANIMAL RESOURCES OF THE UNITED STATES.

IN CHARGE OF G. BROWNE GOODE.

Animals Beneficial or Injurious to Man—Mammals; birds; reptiles; amphibians; fishes; elasmobranchiates; marsipobranchiates; leptocephalians; insects; arachneans; crustaceans; worms; mollusks; radiates; protozoans and marine products not of animal nature.

Means of Pursuit and Capture.—Hand-implements; implements for seizure of objects; missiles; baited hooks; angling tackle; nets, and traps.

Apparatus for Wholesale Destruction.—Hunting animals; decoys and disguises; pursuit—its methods and appliances.

Means of Utilization.—Preparation and preservation of foods; manufacture of textile fabrics, felt and stuffings; preparation of the skin and its appendages; the hard materials; oils, glues, drugs, perfumes, chemical products, fertilizers and lime; preservation of the animal for scientific uses.

Animal Products and their Applications.—Food; clothing; materials employed in the arts and manufactures.

Protection and Culture of Useful Animals.—Investigation; protection, and propagation.

COLLECTION TO ILLUSTRATE THE FISHERY RESOURCES OF THE UNITED STATES.

This is covered to a considerable extent by the preceding group, in connection with which it is arranged. The special features will embrace the following:

Fishing vessels, boats, etc., life size and models.

The apparatus and dories used in the whale fisheries.

Nets, traps, and pounds.

Hooks, lines, baits, etc.

Casts, photographs, and drawings of fish and other aquatic animals.

Prepared or living specimens of aquatic animals.

Products of the waters.

Economical applications of the above products.

E.—COLLECTION TO ILLUSTRATE THE ETHNOLOGY OF THE UNITED STATES.

IN CHARGE OF DR. CHARLES RAW.

(This exhibition is made conjointly with the Indian Bureau of the Interior Department.)

Objects of Stone.

Flaked and chipped stone; raw material (pieces of flint, etc.); flakes and cores of flint, obsidian, etc.; rude or unfinished implements; arrow and spear heads; perforators and scrapers; cutting and sawing implements; dagger-shaped implements; leaf-shaped implements; digging implements, and wedge or celt-shaped implements.

Pecked, ground, and polished stone; wedges or celts; chisels; gouges; adzes; grooved axes; hammers; ceremonial weapons; cutting tools; scraper and spade-like implements; pendants and sinkers; discordal stones, etc.; pierced tablets and boat-shaped objects; grinding and polishing stones; stone vessels; mortars; pestles; tubes; pipes; ornaments, and sculptures.

Objects of Copper.

Implements and ornaments.

Objects of Bone.

Implements, weapons, and ornaments.

Objects of Shell.

Utensils, implements, and ornaments.

Objects of Clay.

Mound pottery and terra cottas.

Objects of Wood.

Fragmentary objects and carvings of an early date.

Ethnological Series.

Man.—Skulls, mummies, etc.

Culture.—Aliments, food (mineral and vegetable), drinks, narcotics, and medicines.

Habitations.—Models of houses, tents, etc., and appurtenances.

Furniture.—Cradle boards, mats, etc.

Vessels and other utensils of household use.—Earthenware; carved horn and wooden ware; stone ware; wicker work; bladders and boxes.

Utensils for smoking, etc.—Pipes; tobacco pouches; snuff apparatus, etc.

Receptacles used as means of transportation.—Pouches, bags, raw-hide cases, burden nets, etc.

SPECIAL BUILDINGS.

Ethnology, Minerals.

Clothing.—Raw material; complete suits; head, body, hand, leg, and foot clothing; parts of dress.

Personal adornment.—Skin ornamentation; head, neck, breast, body, and limb ornaments; toilet articles.

Implements of general use of war and the chase, and of special crafts.—Implements for cutting, drilling, etc.; lances, bows and arrows, clubs, tomahawks, etc.; shields, body armor, etc.; implements for fire-making, arrow-making, pottery, for procuring and manufacturing food; agricultural implements; implements used in spinning, weaving, sewing, and embroidery.

Means of locomotion and transportation.—Snow shoes, ice creepers, etc.; balsas, dug-outs, bark canoes, hide boats, etc.; saddles, bridles, halters, harness, etc.; sleighs, etc.

Games and pastimes.—Gambling implements; masks, etc., used in dancing; rackets, balls, etc.; toys.

Music.—Drums, rattles, whistles, flutes, etc.

Art.—Pictorial representations and carvings.

Superstition.—Charms, mythological figures, etc.

COLLECTION TO ILLUSTRATE THE MINERAL RESOURCES OF THE UNITED STATES.

IN CHARGE OF W. P. BLAKE.

The principal objects of this collection of the useful ores and minerals of the country have been to illustrate: 1st. The nature and variety of the mineral resources of the United States; 2d. The geographical distribution and geological associations of the minerals; 3d. The extent to which they have been utilized; 4th. The mechanical, metallurgical, and chemical processes by which they are extracted or converted into useful products; 5th. The inherent and comparative qualities of the extractive products. A portion of the collection is arranged according to the nature of the objects, irrespective of locality, but the bulk of the Exhibition is grouped geographically by States. There is also a section devoted to models and drawings, and one to geological maps and graphic charts. This collection occupies the northeast portion of the Government Building, upon the right of the main aisle.

I. SYSTEMATIC SERIES, GROUPED IRRESPECTIVE OF LOCALITY, IN THE FOLLOWING ORDER:

a Crystalline minerals, chiefly for scientific and educational purposes.

b Fuels and petroleum.

c Ores, metals, and their immediate derivatives.

d Ornamental stones and gems.

e Building stones; marbles, etc.

f Artificial stones; lime; mortars; cement.

g Fictile materials and direct products, including refractory materials, etc.

h Pigments; colors; detergents.

i Grinding, abrading, and polishing substances.

k Fertilizing substances.

l Sulphur, salts, and minerals chiefly used in chemical manufactures.

II. ORES, MINERALS, AND METALLURGICAL PRODUCTS, GROUPED BY STATES.

Maine.—Iron ores, limestone and pig iron; granite for buildings and monuments.

New Hampshire.—Granitic and metamorphosed rocks; granite; geological map of the State.

Vermont.—Marble; slate of various colors; roofing slate, etc.; iron ores and limonite; chilling pig iron; spiegeleisen; kaolin and fire brick; sand for glass making; copper ores, copper, and metallurgical products; scythe stones.

Massachusetts.—Iron ore, siderite; magnetic iron ore, and steel produced from it; iron and steel wire; emery, massive and associate; corundum, corundophyllite, diaspore, red oxide of titanium, and ilmenite; argentiferous lead ore, galenite; copper ore; syenite and porphyry; porphyry, a series of polished specimens; granite; sand for glass making; glass, cut and pressed; pearl ash and red lead; kaolin; potters' clay, brick clay, etc.; potters', paper, and alum clay; marble and limestone; geological map of the State.

Rhode Island.—Granite, for building and monumental purposes; magnetite; anthracite and graphitic coal, in large mass and in lumps.

Connecticut.—Granite and building stone; marble and limestone; serpentine marble, verd antique; barytes (sulphate of barytes); kaolin, brick clay, and products; iron ores, limonite, etc.; pig iron; iron ore, spathic and associates; cement steel; mining picks and hammers; copper and alloys, nickel silver, etc.; feldspar, silex, etc., for pottery purposes; geological map of the State.

New York.—Magnetic iron ores, building stones, etc.; fluxes, fuels, and iron; Bessemer steel; hematite, magnetite, etc.; malleable cast iron; puddled iron and muck bar; limestone and lime; hydraulic limestone, hydraulic cement, and cement drain-pipe; kaolin, crude and washed; "incombustible mineral wool," or nitrous fibre "slag felting"; lead and tin foil; fire clay and fire clay goods, refractory materials, etc.

New Jersey.—Magnetic iron ores; iron ore; massive and granular willemite; zinc ores and franklinite; zinc; spiegeliron, "franklinite iron"; calamine (silicate of zinc); potters' and brick clay and iron-stone china ware; refractory furnace materials, fire brick, etc.; fire-brick clay and fire brick, etc.

Pennsylvania.—Iron ore, flux, and fuel; coal and coke; kaolin; limestone; iron ores, limonite, specular iron, etc.; copper ores; copper and copper products; petroleum and petroleum products; glass, and materials for its manufacture; window glass and materials; pig iron and ores; nickel and cobalt ores and products; cast steel; sheet iron; chromite.

Maryland.—Iron ore, flux, and fuel.

Virginia.—Zinc ores, calamine; lead ores, galena, cerussite, etc.; gypsum; barytes; kaolin; iron ores, magnetic, hematite, limonite, and fossil ore; coal and coke; copper ores; salt brine, fossil salt, and prepared salt; gold-bearing quartz; manganese; granite.

West Virginia.—Bituminous coal; coke; iron ores, black band, brown hematite, and fossil ores.

North Carolina.—Gold and silver ores; copper ores; marble; corundum and the associate minerals; iron ores and iron; muscovite (mica); geological map of North Carolina.

South Carolina.—Phosphatic fossils, mineral fertilizers, etc.; minerals and ores.

Alabama.—Ores and coal; spiegeleisen and ores; geological map of Alabama.

Minerals, Geological Maps and Publications.

Tennessee.—Iron ores, coal and mineral products; copper pyrites and vein stone; refined copper; geological map of Tennessee.

Georgia.—Auriferous gravel; gold-bearing quartz, etc.

Kentucky.—A series of specimens illustrating the mineral resources of the State.

Louisiana.—Rock salt; sulphur.

Ohio.—Open hearth steel; iron ores, flux and fuel; pig iron; potters' clay and pottery; crude and manufactured plaster; building stone.

Indiana.—Specimens of block coal, and iron ores; potters' clay; "Indianite."

Missouri.—Lead ores, galena, cerussite, etc.; pig lead; zinc ores; barytes, associated with lead ores; marble, limestone, and granite; iron ores, magnetite, specular iron, hematite; pig iron; copper ore; coal and coke; fossil plants, etc.; porphyry.

Michigan.—Iron ores, flux, and Bessemer pig iron; specular and magnetic; native copper, crystallized; mass and stamp work, with silver and associate minerals, and in amygdaloid and "ash bed"; building stone;

native silver; copper and "copper conglomerate."

Colorado.—Gold and silver ores; gold, and ores containing tellurium - silver and copper ore.

Utah.—Silver ores.

Idaho.—Gold and silver ores.

Montana.—Silver ores; argentiferous galena.

Arizona.—Copper ores; gold quartz, and other minerals.

Nevada.—Silver and gold ores.

California.—Gold and silver ores; auriferous gravel, "cement" with gold; quicksilver ores, cinnabar and native quicksilver; copper ores; tin, ores and tin.

III. MODELS AND DRAWINGS.

IV. GEOLOGICAL MAPS AND GRAPHIC CHARTS.

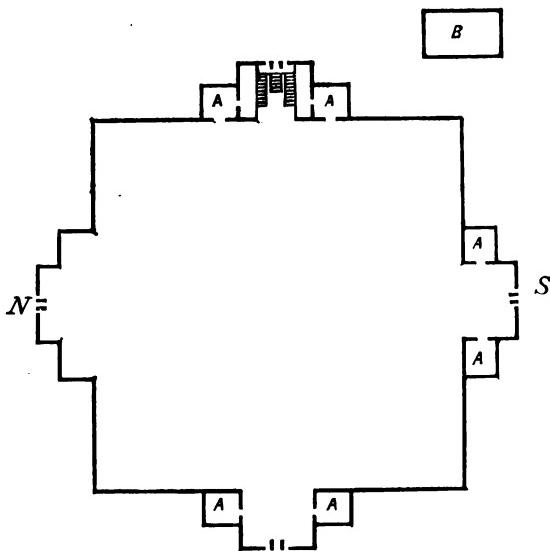
Geological Map of the United States and Territories.

Geological and other Maps of the State of New Hampshire.

Geological Reports and Publications.

WOMEN'S PAVILION.

Scale, 80 ft. to 1 in.



BELMONT AVENUE.

A Offices.

B School-house.

Total Length, 208 ft. Width, 208 ft. Height of Nave, 41 ft. Height of Dome, 67 ft.



THE HARDMAN PIANO

10 years

PIANO OF PROGRESS!

If you wish to know what progress America has made in
PIANO FORTE MANUFACTURING, in

Tone, Action, Elegant Design, Artistic Workmanship, etc.,

Look at the exhibition made by

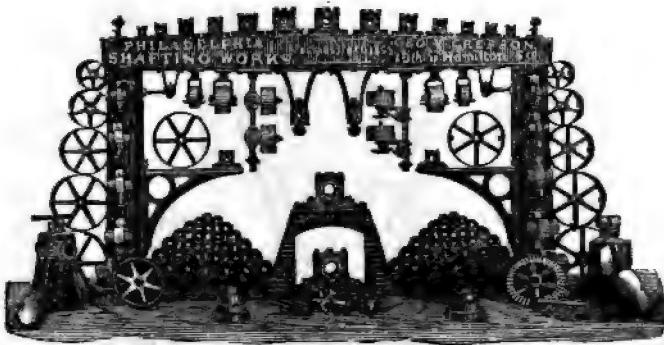
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MAIN EXHIBITION BUILDING.

If you wish to know how America produces such noble instruments, it will pay to make a visit to the best appointed Piano Manufactory in the world, that of

H. HARDMAN,

Nos. 490, 492, 494, 496, 498 West 57th Street,
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GEO. V. CRESSON,

MANUFACTURER OF

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ALL SIZES OF SHAFTING,
PATENT INTERNAL CLAMP COUPLING,
HANGERS OF ALL SIZES AND DROPS IN REGULAR USE,
BALANCED PULLEYS, LARGE ASSORTMENT OF SIZES,

} On Hand.

ALL SIZES OF IMPROVED PULLEYS MADE IN HALVES.

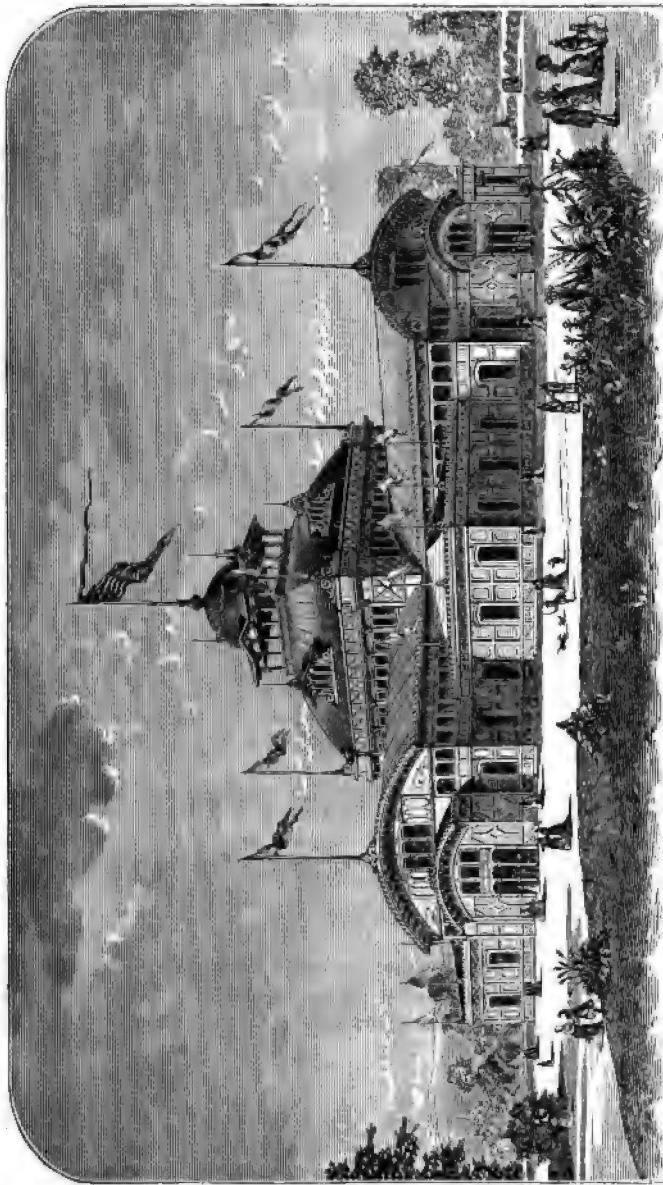
EVERY APPURTENANCE USED IN TRANSMISSION OF STEAM POWER.

Special attention is called to the Driving Pulleys with Internal Clamp Hub which gives a perfect fit on the Shaft, without Forcing Machine or Sledge Hammer.

Cor. of Eighteenth & Hamilton Sts.,

PHILADELPHIA, PA.





WOMEN'S PAVILION.

WOMEN'S PAVILION. No. 161.

Architect, H. J. SCHWARZMANN.—Size, 26,368 square feet.

THIS pavilion was erected by money raised through the exertions of the women of the United States, and is devoted exclusively to the results of women's labor. It is built of wood, and is situated on Belmont avenue, adjacent to the Horticultural grounds.

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SPECIAL BUILDINGS.

Furniture, Household Implements, Clothing, Needle Work.

- Ceramics—Pottery, Porcelain, Glass, etc.**
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 - 26 Jones, Mrs. M. A., Philadelphia, Pa.—Children's clothing, dress cutting system. Sec. D. 250
 - 27 Tardy, Mrs. C., Paterson, N. J.—Infants' exercising corset. Sec. D. 250
 - 28 Brosse, Madame S. C., San Francisco, Cal.—Models for self-measurement. Sec. D. 250
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 - 32 Overend, Rebecca C., Fairlee, Md.—Tippet and muff from pod of wild cotton. Sec. B. 250
 - 33 Livingston, L. M., New York.—Garment cutting, tailors' system. Sec. D. 250
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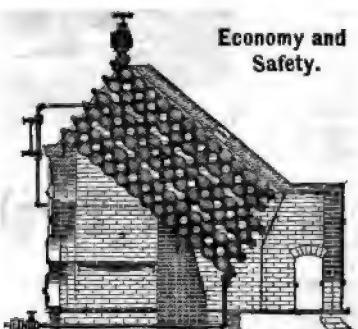
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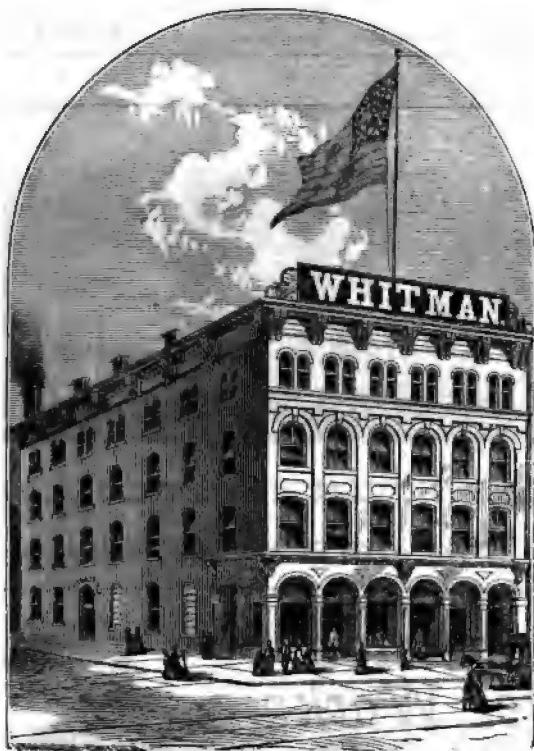


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- 105 Caldwell, Miss Hattie D.**—Carved altar cross. 405
- 106 Johnson, Misses Hattie and Mary.**—Carved hanging cabinet and picture frame. 405
- 107 Cooper, Miss Alice.**—Carved *précieux* and stool. 405
- 108 Jordan, Miss Laura B.**—Carved mahogany hanging cabinet. 405
- 109 Abbott, Mrs. E. F.**—Carved dressing stand. 405
- 110 Rice, Miss Julia H.**—Carved parlor table. 405
- 111 Laws, Miss Lizzie T.**—Carved gothic flower stand. 405
- 112 Gurley, Miss Clara.**—Carved writing desk. 405
- 113 Collard, Miss Helen.**—Carved ebony prayer book covers. 405
- 114 Johnson, Misses Hattie and Mary.**—Carved wall pocket. 405
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- 117 De Pilgrim, Miss V.**—Carved black walnut bedstead. 405
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- 121 Collard, Miss Isora.**—Carved book racks and casket. 405
- 122 Johnson, Misses Hattie and Mary.**—Carved photograph frames. 405
- 123 McDowell, Miss W. H.**—Carved gothic stand. 405
- 124 Huston, Mrs. A. B.**—Carved dog kennel frame. 405
- 125 Dominick, Mrs. G.**—Carved cherry wall pocket and casket. 405
- 126 Tidball, Miss Flora J.**—Carved flower stand. 405
- 127 Collard, Miss Helen.**—Carved picture frame. 405
- 128 Vallandingham, Miss N.**—Gentleman's carved dressing stand. 405
- 129 Collier, Miss Lizzie M.**—Carved tea pot rest. 405
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- 136 McCloskey, Miss Lizzie.**—Carved wall pocket and photograph frame. 405
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- 138 Pitman, Miss Agnes.**—Carved fruit plate and card receiver, library stool, lamp stand, and picture frame. 405
- 139 Dunlap, Miss Sarah.**—Carved wall pocket. 405
- 140 Hollingshead, Miss H.**—Carved casket and picture frame. 405
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Meltham Mills, near Huddersfield,

MANUFACTURERS OF

SEWING, CROCHET,

AND

EMBROIDERING COTTON.

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49 Cannon Street, London, E. C. | 10 Garthland Street, Glasgow.
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WM. H. SMITH & CO., 32 Greene Street, New York, Sole Agents
for the United States.

BROOK'S PATENT GLACE SPOOL COTTON,

LENGTHS WARRANTED,

FOR HAND AND MACHINE USE.

Brook's Six Cord Soft Finish Spool Cotton,

LENGTHS WARRANTED,

FOR HAND AND MACHINE USE.

BROOK'S PATENT GLACE THREAD. IN WHITE, BLACK, AND COLORS.

The extraordinary strength, smoothness, and durability obtained by this invention have secured for it great popularity, and it is consequently much imitated in inferior qualities. This Cotton is always labeled BROOK'S PATENT GLACE THREAD, and without their name and crest (a GOAT'S HEAD), the words "Glace," or "Patent Glace," do not denote that it is of their manufacture.

BROOK'S PATENT NINE AND SIX CORDS

Will be found of very superior quality, and strongly recommended wherever SOFT COTTON is preferred.

EXHIBITION PRIZES.

Only Medal, London, 1851. | Only First Class Medal, Paris, 1855.
Prize Medal, London, 1862. | Gold Medal, Paris, 1867.
Only Diploma of Honor, Vienna, 1873.

WAGON AND CARRIAGE BUILDING. No. 5.

Architects, H. J. SCHWARZMANN, HUGH KAFKA.—Size, 346 feet by 231 feet.

An annex to the Main Building, situated opposite to it on the Avenue of the Republic. It is built of wood, one story in height.

CENTENNIAL NATIONAL BANK. No. 6.

Architects, H. J. SCHWARZMANN, HUGH KAFKA.—Size, 72 feet by 40 feet.

E. A. ROLLINS, President.

Situated at the northwest corner of the Main Exhibition Building, and east of the Centennial Commission Office. It is one story high, built of wood, and is the medium for transacting the financial affairs of the Exhibition.

SWEDISH SCHOOL HOUSE. No. 8.

Architects, ISÆUS & JACOBSSON.—Size, 40 feet by 50 feet.

Situated in the Swedish Government grounds, north of the Main Exhibition Building. A one story frame house, containing school rooms and the interior arrangements of a Swedish school house. The framework for the building was imported from Sweden, and is on exhibition by G. O. Wengstion, of Stockholm.

THE PENNSYLVANIA EDUCATIONAL HALL. No. 9.

Architects, PETERS & BURGER.—Size, 148 feet by 100 feet.

The object of this Hall is the exhibition of the educational interests of the State of Pennsylvania. It is situated north of the Art Gallery, fronting on the Lansdowne drive. The building is octagonal in shape, and contains thirty-two alcoves for the display, a large assembly room, and a reception room. The following summary represents the exhibits:

1 Representations of kindergarten, primary, grammar, and high schools, with their appropriate furniture, fittings, text-books, apparatus, and work.

Systems of graded schools, with views and models of buildings, charts of statistics, specimen of apparatus, and volumes of scholars' work.

Schools of counties, with county and township maps of school-houses, photographs of buildings, charts of statistics, and scholars' work; plans of school buildings, with systems of heating, lighting, and ventilating, and designs.

Department of Public Instruction charts, showing statistics and outline of public school system, reports, forms, certificates, and laws.

Text-books, school furniture and merchandise, school apparatus and philosophical apparatus; school ornamentation, consisting of a fountain, a series of Rogers' groups, vases, hanging baskets, statues, engravings, etc. 300

2 Academies and Seminaries, with pictures of buildings, specimens of apparatus, cabinet collections, drawings, and paintings.

Universities and colleges, with pictures of buildings, maps of grounds, views of in-

terior rooms, charts of history and statistics, courses of study, text-books, and productions of professors and alumni.

Technical schools and departments, with drawings, casts, models of bridges, specimens of apparatus, etc. 301

3 Normal Schools.—Views of buildings and grounds, models, courses and methods of study, catalogues and reports, charts of statistics, and students' work.

Schools of Design.—Drawings, models, etc.

Commercial Schools.—Specimens of penmanship, etc. 302

4 Institution for the Blind.—Apparatus for teaching, intellectual and industrial work done by the blind.

Institution for the Deaf and Dumb.—Apparatus and methods of teaching. 303

5 Orphan Schools.—Views of buildings, scholars' intellectual and industrial work, books of record, forms and charts.

School for the Feeble-minded.—Text-books, apparatus, methods, etc. 346

6 Sunday-Schools.—Collections of Sunday-school material, incentives, maps, charts, forms, and models. 348

SINGER SEWING MACHINE BUILDING. No. 10.

Architect, JAMES VAN DYKE, Elizabeth.—Size, 81 feet by 56 feet.

SINGER MANUFACTURING CO., New York City.

Contains an exhibit of every style of machine manufactured by the Singer Manufacturing Company, and samples of work. It is constructed of wood, and is located on Lansdowne drive, north of the Art Gallery.

SPECIAL BUILDINGS.**FRENCH RESTAURANT, LAFAYETTE. No. 11.**

Architect, H. J. SCHWARZMANN.—Size, 130 feet by 30 feet.
PAUL SUDREAU, Philadelphia.

This is a two story wooden building, located northwest of the Art Gallery, between Lansdowne drive and the brook. It is conducted on the French plan.

HUNTER'S CAMP. No. 12.

"FOREST AND STREAM" PUBLISHING CO., N. Y., WM. C. HARRIS, Manager.

This camp illustrates sportsmen's life in the backwoods, and contains what is known as a permanent camp, built of logs and bark, with all the appurtenances of hunting and fishing, including portable boats, sporting firearms, rods and fishing tackle ready for use, portable cooking apparatus, specimens of game birds, a kennel of sporting dogs, etc., etc. An additional feature will be a lake or pond stocked with game fish, and a running stream containing brook trout. It is located in the ravine south of Horticultural Hall.

THE DAIRY ASSOCIATION BUILDING. No. 13.

Architects, H. J. SCHWARZMANN, HUGH KAFKA.—Size, 76 feet by 25 feet; pavilion, 80 feet by 30 feet.

Situated on the north side of Lansdowne Valley, southwest of Horticultural Hall. It is a two story rustic building, and the surrounding grounds are laid out as a garden in which is a pavilion for the additional accommodation of visitors.

PENNSYLVANIA BIBLE SOCIETY PAVILION. No. 14.

Architect, I. C. SIDNEY.—Size, 17 feet by 23 feet.

Located near Lansdowne Valley, south of Horticultural Hall, close to the Bridge; oval in shape, and surmounted by a carved roof with a projecting cornice. It bears the inscription, "The Bible without note or comment." In front is an open Bible, and over it the text from Jeremiah xxii. 29: "O earth, earth, earth, hear the word of the Lord." Only Bibles and Testaments will be sold.

PHILADELPHIA PAVILION. No. 16.

Architects, H. J. SCHWARZMANN, HUGH KAFKA.—Size, 88 feet by 66 feet.

For the accommodation of the municipal government of the City of Philadelphia. It contains a hall and parlors, and a room devoted to the use of the Park Commission. It is a one story frame building, situated on Lansdowne drive east of Horticultural Hall.

GERMAN EMPIRE PAVILION. No. 19.

Architects, H. J. SCHWARZMANN, HUGH KAFKA.—Size, 83 feet by 33 feet.

Constructed of stone, one story high, furnishing accommodations for the Imperial Commissioners as well as German visitors. It is located on Lansdowne drive, between Belmont and Agricultural Avenues.

BRAZILIAN GOVERNMENT BUILDING. No. 20.

Architects, H. J. SCHWARZMANN, HUGH KAFKA.—Size, 56 feet by 70 feet.

Situated on Agricultural Avenue between Fountain Avenue and Lansdowne drive; two stories high, built of wood, and surmounted by a cupola. It contains reception rooms and offices for the Commissioners and visitors from the empire of Brazil.

PHILADELPHIA "TIMES" PAVILION. No. 23.

Architects, WILSON BROS. & Co., Philadelphia.—Size, 28 feet by 17 feet.
A. K. MCCLURE, Editor.

The Centennial business office of the "Times," a daily paper, issued morning and

evening, and printed on a Hoe perfecting press in Machinery Hall. It is a one-story frame building, located on Belmont Avenue, opposite and east of the Lake.

GLASS MAGAZINE. No. 24.

Architect, H. J. SCHWARZMANN.—Size, 40 feet by 40 feet.
KLAUTSHECK, THOMAS, & STUART, Philadelphia.

This magazine is erected adjoining the Photographic Association Building, opposite the Lake. It is constructed mainly of glass from the factories of the above firm, and contains a full assortment of plate and window glass, and glass shades for the accommodation of exhibitors; is two stories high, and is connected by a bridge with Belmont Avenue.

CIGAR PAVILIONS. Nos. 25, 36, 103, 108, 165, 166.

Architect, HENRY A. MACOMB.—Size, 70 feet square.
W. A. FLEMING & CO.

These pavilions, six in number, are located in different parts of the grounds. They are frame buildings, one story high, with observatories.

AMERICAN FUSEE COMPANY'S BUILDING. No. 26.

Size, 14 feet by 14 feet.
W. R. DAVENPORT, New York.

Situated on Lansdowne drive, north of the Judges' Building.

**CENTENNIAL PHOTOGRAPHIC ASSOCIATION BUILDING.
No. 27.**

Architects, H. J. SCHWARZMANN, HUGO KAFKA.—Size, 150 feet by 30 feet.

The Photographic Association have erected a one-story frame building, located north of the Main Exhibition Building on the east side of Belmont Avenue. It contains one room for the exhibition of photographs, and three rooms for photographers for working purposes.

PENNSYLVANIA RAILROAD OFFICE. No. 28.

Architect, J. M. WILSON, Engineer of Bridges and Buildings, Pennsylvania Railroad Co.—Octagon, 75 feet in diameter.

A two-story frame building, situated on the northeast corner of Belmont Avenue and the Avenue of the Republic, adjoining the Judges' Hall. It is designed for the general ticket office of the four great trunk lines, viz.: N. Y. Central, Erie, Baltimore and Ohio, and Pennsylvania Railroads. Tickets are sold to all points, and information is furnished regarding routes of travel.

MEDICAL DEPARTMENT. No. 29.

Architect, H. J. SCHWARZMANN.—Size, 65 feet by 32 feet 6 inches.

This department is instituted for the immediate gratuitous relief of accidents and sudden cases of illness occurring within the Exhibition grounds. It is located in Lansdowne ravine, equidistant from the Main Building and Horticultural Hall, and will contain two wards of three beds each, for male and female patients. An ambulance is provided for the removal of patients to their homes or to city hospitals.

Officers.

WILLIAM PEPPER, M.D., Medical Director.

THEODORE HERBERTE, M.D., Secretary and Resident Physician.

JACOB ROBERTS, M.D., Member of Staff.

SPECIAL BUILDINGS.

S. W. GROSS, M.D., Member of Staff.
 H. C. WOOD, M.D., Member of Staff.
 R. G. CURTIN, M.D., Member of Staff.
 HAMILTON OSGOOD, M.D., Member of Staff.
 DE FOREST WILLARD, M.D., Member of Staff.

JUDGES' HALL. No. 30.

Architects, H. J. SCHWARZMANN, HUGH KAFKA.—Size, 152 feet by 113 feet.

A two-story frame building, situated north of the Main Exhibition Building, containing ten committee rooms and four private rooms for the judges; also one large hall in the centre, and a smaller hall in the rear. It is intended for the accommodation of the international jury.

TELEGRAPHIC BUILDING. No. 31.

Architects, BALDERSTON & HUTTON, Philadelphia.—Size, 80 feet by 75 feet.

DEPARTMENT OF PUBLIC COMFORT COMPANY, Limited.

W. MARSH KASSON, Chairman, Philadelphia.

The reception room of the Public Comfort Building opens from the east into the telegraphic department, which furnishes communication with every portion of the world. Is a one-story frame building opposite the northwest corner of the Main Exhibition Building, fronting the Esplanade. All of the instruments and appliances of the latest design are on exhibition and in use.

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| <p>1 Phillips, Wm. J., Philadelphia, Pa.—Printing telegraph instrument, combining the bell, dial, and printing telegraph in one instrument.</p> <p>2 Phillips, Eugene F., Providence, R. I.—Covered wire for telegraphic purposes.</p> <p>3 Gray, Eliha, Chicago, Ill.—Electro-harmonic telegraph, including apparatus for transmitting tunes and eight or more messages simultaneously.</p> <p>4 Atlantic and Pacific Telegraph Co., Philadelphia, Pa.—Automatic and duplex telegraph apparatus.</p> | <p>5 Gray & Barton, Western Electric Telegraph Co., Chicago, Ill.—Printing telegraph instrument, with unison attachment.</p> <p>6 Frost & Hanline, Philadelphia, Pa.—Automatic thermostat for fire-alarm telegraph.</p> <p>7 Brooks, David, Philadelphia, Pa.—Underground cables for telegraph wires.</p> <p>8 Gamewell, J. N., & Co., New York, N. Y.—American fire-alarm telegraph, with non-interference repeaters and signal-boxes, and mechanical gong apparatus.</p> <p>9 American District Telegraph Co., Philadelphia, Pa.—District telegraph signal-boxes, with self-starting registers for messengers, guides, and interpreters.</p> |
|---|--|

JAPANESE DWELLING—A HOTEL. No. 33.

Architect, MATSUO-EHE, Tokio.—Size, 80 feet by 15 feet, and two wings each 21 feet by 15 feet.

Erected by a joint-stock company as a hotel and restaurant for the convenience of Japanese visitors. The wood of which it is constructed, as well as the nails and tiles, were imported from Japan. The odor arising from the wood is regarded as a peculiar feature. It was built entirely by native workmen sent hither by the Japanese Government, and is situated in the neighborhood of the British Buildings, north of Machinery Hall.

DEPARTMENT OF PUBLIC COMFORT. No. 35.

Architects, BALDERSTON & HUTTON, Philadelphia.—Size, 264 feet by 112 feet.

DEPARTMENT OF PUBLIC COMFORT COMPANY, Limited.

W. MARSH KASSON, Chairman, Philadelphia.

Located on the corner of the Avenue of the Republic and Agricultural Avenue, opposite the northwestern corner of the Main Exhibition Building, and fronting the Esplanade. It is a two-story frame building, containing a reception room and ladies' parlor, free to all; barber shop; coat and baggage room; lunch counter and lavatories. Tickets for places of amusement are on sale, and a daily register of all visitors is kept. The western section of the building is occupied by the President of

THE SUN NEWSPAPER

Is printed and published every day in the year, at 166, 108, and 46 Nassau Street, New York City. Its regular edition on secular days now (April, 1876) averages about 140,000; its weekly edition over 88,000; and its Sunday issue is nearly 100,000. It thus prints and sells more than a million copies a week; which are read all over the United States. This is a circulation unprecedented in American journalism, and it is constantly on the increase. In proof of this, let the following figures testify. They show the number of copies of THE SUN printed every week during the year ending March 11, 1876.

WEEK ENDING	COPIES PRINTED.	WEEK ENDING	COPIES PRINTED.
March	20.....849,382	September	18.....869,358
	27.....845,802		25.....858,778
April	3.....857,956	October	2.....863,935
	10.....868,556		9.....870,826
	17.....855,076		16.....878,082
	24.....858,270		28.....874,625
May	1.....869,542	November	80.....876,160
	8.....867,550		6.....908,580
	15.....877,450		13.....852,372
	22.....874,946		20.....847,815
	29.....866,276		27.....836,248
June	5.....873,782	December	4.....845,878
	12.....869,769		11.....1,042,716
	19.....880,848		18.....956,294
	26.....888,846		25.....938,864
July	8.....898,862	January	1.....983,987
	10.....867,574		8.....952,202
	17.....877,400		15.....953,019
	24.....876,282		22.....969,911
	31.....874,216		29.....967,850
August	7.....865,558	February	5.....998,080
	14.....875,982		12.....1,024,647
	21.....880,488		19.....1,027,209
	28.....870,502		26.....1,014,766
September	4.....872,211	March	4.....1,014,998
	11.....860,766		11.....1,028,951
TOTAL		46,799,768	

In printing these papers, no less than three million four hundred and twenty-six thousand six hundred and ten (3,426,610) pounds of paper were consumed.

ADVERTISING RATES.

DAILY AND SUNDAY, 40 cents a line, ordinary advertising; large type, 80 cents; and preferred positions, 50 cents to \$2.50, according to classification.

WEEKLY, 50 cents a line; no extra charge for large type. Preferred positions, from 75 cents to \$2.00.

SUBSCRIPTION RATES.

DAILY (4 pages), by mail, 55c. a month, or \$6.50 a year, postpaid; with Sunday edition, \$7.70.

SUNDAY (8 pages), \$1.20 per year, postpaid.

WEEKLY (8 pages), \$1.20 per year, postpaid.

Address,

THE SUN,

New York

THE American Newspaper Union.

A. J. AIKENS, President.

New York Newspaper Union,	148 and 150 Worth St., New York.	315 Newspapers,	\$3.00 per line, per week.
Chicago Newspaper Union,	114 Monroe St., Chicago.	350	" \$3.50 "
Milwaukee Newspaper Union,	365 East Water St., Milwaukee.	120	" \$1.25 "
Aikens Newspaper Union,	143 Race St., Cincinnati.	200	" \$2.00 "
Southern Newspaper Union,	227 Second St., Memphis, Tenn.	145	" \$1.50 "
St. Paul Newspaper Union,	17 Wabashaw St., St. Paul, Minn.	73	" \$.75 "

THE ORIGIN OF CO-OPERATIVE NEWSPAPER ADVERTISING.

Co-operative newspaper printing, as now practised, originated in Wisconsin twelve years ago. It is termed *co-operative* for the reason that one side of each of the newspapers is printed at a central office, and the paper sent in its half-printed state to the home office, where it is completed with editorials, local news, and other matter prepared by the editor or publisher. In December, 1846, the idea of co-operation, with *advertisements*, occurred to Mr. Aikens, while yet serving his time as an apprentice, in printing the message of President Polk on one side of a country newspaper of New England at Boston, and the other half being printed at the local office.

Mr. A. J. Aikens, a practical printer and business man, conceived the idea of reducing the cost of ready-printed paper, as it is now termed, to country publishers, by making an agreement with them to use a certain space in each of their papers for advertisements that he might procure: This plan of co-operation he put into practice twelve years ago, at the office of Cramer, Aikens & Cramer, Milwaukee. It at once became successful, leading to the establishment of co-operative newspaper printing-offices in Chicago, New York, St. Louis, Cincinnati, Memphis, St. Paul, and other places. There are now over two thousand newspapers printed upon the co-operative plan in the United States and Canadas, and the number is constantly increasing, it having more than doubled in the last five years. The enterprise is no longer an experiment, but an established success, and the system is one yielding manifold advantages to advertisers as well as to local publishers.

The American Newspaper Union

Is essentially national. The papers represented in it are located in all the States of the Union and in nearly five hundred county seats. They circulate over the whole area of the country from Maine to Colorado, distributing at least *one hundred copies every year to each square mile of the settled portions of the United States*.

Although, as a whole, the Union List is national, covering all sections, it is so made up of different members as to be susceptible of easy division into sections—East, Middle, West, South. The distribution of the papers is as follows:

New England	78	Illinois	117	Nebraska	15
New York	101	Michigan	86	Missouri	17
New Jersey	27	Wisconsin	98	Georgia	10
Pennsylvania	65	Tennessee	29	Alabama	32
Virginia	24	Kentucky	29	Louisiana	11
No. and So. Carolina	24	Minnesota	79	Mississippi	29
Ohio	122	Iowa	83	Other States	46
Indiana	81				

AGGREGATE CIRCULATION.

The circulation of these papers is large and constantly increasing. It is larger than the circulation of any other lists or combinations of country papers in the United States—the last aggregate weekly circulation being *seven hundred thousand seven hundred and thirty copies (700,730)*.

SEND TO EITHER OFFICE FOR A CIRCULAR.

the Centennial Commission. Office desk room is afforded to exhibitors. The centre portion of the building is surmounted with an open-air gallery, giving a view of the grounds.

STAND PIPE FOR WATER-WORKS. No. 37.

Architect, FREDERICK GRAFF, Philadelphia.—Height, 133 feet.
J. MILLER, Brooklyn, N. Y.

Used for distributing through the Centennial grounds the water from the works on the river bank. It is constructed of wrought iron, and through it the water is carried to the height of 208 feet above the Fairmount dam. A 16-inch main conveys the supply to different localities.

FRENCH GOVERNMENT PAVILION. No. 38.

Architect, DE DARTEIN, France.—Size, 100 feet by 50 feet.
DEPARTMENT OF PUBLIC WORKS, France.

Is constructed of brick and iron, and exhibits models in relief and designs of all the public works of France executed during the last few years; also a collection of books and publications relative thereto. It is situated west of the Art Gallery, on Lansdowne drive.

VIENNA BAKERY, OR COMPRESSED YEAST BUILDING. No. 40.

Architects, H. J. SCHWARZMANN, HUGH KAFKA.—Size, 146 feet by 105 feet.
GAFF, FLEISCHMANN, & CO., Blissville, Long Island, N. Y.

Designed to exhibit the advantages of using compound yeast in baking. It also contains a coffee house.

BANKERS' EXHIBIT. No. 41.

Architect, JAMES H. WINDRIM, Philadelphia.—Size, 69 feet by 41 feet.

Erected by the banks, bank officers, and bankers of the country for the exhibition of coins and currency. It is located east of the Art Gallery, and between the Photographic Gallery and the Vienna Bakery.

EMPIRE TRANSPORTATION COMPANY'S BUILDING. No. 42.

Architects, WILSON BROS. & CO., Philadelphia.—Size, 70 feet by 60 feet.
EMPIRE TRANSPORTATION CO., Philadelphia.

This structure is located north of the eastern end of the Main Exhibition Building, and exhibits by models the method of transportation used by the Empire Transportation Company and its auxiliaries in the United States.

CENTENNIAL FIRE PATROL. No. 43.

Architect, H. J. SCHWARZMANN.—Size: 1, 60 feet by 58 feet. 2. 84 feet by 74 feet.

The Fire Patrol is accommodated in two buildings, built of wood, one story high, containing halls for the engines, stalls for the horses, and dormitories for the firemen. The smaller house is at the northeast corner of the Main Exhibition Building, and the larger at the intersection of Lansdowne drive and Belmont Avenue. They are supplied with steam fire engines, hose trucks, ladders, and patent fire extinguishers.

PORUGUESE GOVERNMENT BUILDING. No. 44.

Architects, H. J. SCHWARZMANN, HUGH KAFKA.—Size, 55 feet by 51 feet.
A one story wooden structure, with cupola, located on the northeast corner of Agricultural Avenue and Lansdowne drive, and used to accommodate Commissioners and visitors from Portugal.

SPECIAL BUILDINGS.

BURIAL CASKET BUILDING. No. 46.

Size, 40 feet by 20 feet.

Is intended to exhibit various designs of funeral caskets, and is situated north of Extension to Art Gallery, on Lansdowne drive, near the bridge. A one story frame building, with turrets.

COAT AND BAGGAGE SERVICE BUILDINGS. No. 47.

Architects, BALDERSTON & HUTTON, Philadelphia.—Size, 25 feet by 30 feet.

DEPARTMENT OF PUBLIC COMFORT COMPANY, Limited.

W. MARSH KÄSSON, Chairman, Philadelphia.

Contains conveniences for checking small baggage, wearing apparel, baskets, umbrellas, bundles, etc., which are retained until called for, or delivered at designated points within the grounds. The chief offices are located as follows: One at the north entrance of Belmont Avenue; another on Lansdowne drive near the entrance from the Reading Railroad, and the third at the southeast corner of the Main Exhibition Building; are one-story frame structures. In connection with these are spaces within the principal Exhibition buildings, devoted to the same purposes. All of these offer for sale newspapers, periodicals, photographs, stationery, etc. Umbrellas are furnished both for sale and hire. At these points are facilities for transmitting messages by telegraph or messenger boys, and for obtaining rolling chairs.

ENGLISH BOILER HOUSE. No. 52.

Size, 24 feet by 71 feet.

A composite wood and stone building, furnishing steam to English and other foreign exhibitors in Machinery Hall, and situated to the south of it.

CORLISS BOILER HOUSE. No. 54.

Architects, PETTIT & WILSON, Philadelphia.—Size, 40 feet by 80 feet.

CORLISS STEAM ENGINE COMPANY, Providence, R. I.

Is built of composite stone and wood, and furnishes steam for the Corliss engine in Machinery Hall from twenty vertical tubular boilers, aggregating 1400 horsepower. It is situated south of Machinery Hall.

LIPPINCOTT'S SODA-WATER FOUNTAINS.

Architects, H. J. SCHWARZMANN, HUGH KAFKA.—Size: two 20 feet in diameter; one 24 feet in diameter.

CHARLES LIPPINCOTT & CO., Philadelphia.

These pavilions, three in number, are situated in different parts of the grounds.

STOKES & PARRISH MACHINE SHOP, etc. No. 57.

Size, 112 feet by 60 feet.

STOKES & PARRISH, Philadelphia.

Constitutes a part of Annex No. 2 to Machinery Hall, and is intended to execute repairs and machine work for the exhibitors. It is located south of Machinery Hall.

NEVADA QUARTZ MILL. No. 59.

Size, 60 feet by 43 feet.

STATE OF NEVADA.

Exhibits the process of manipulating ores and precious metals. It is a one story frame building, situated south of Machinery Hall.

SPECIAL BUILDINGS.

95

GAS MACHINE. No. 66.

Octagonal, 15 feet in diameter.

J. C. TIFFANY, Boston, Mass.

Exhibits the mode of generating a fixed illuminating gas. A one story frame structure, situated south of Machinery Hall.

STARR'S IRON WORKS. No. 66.

JESSE W. STARR & SON, Camden, N. J.

The space allotted to Messrs. Starr & Son is occupied with gas works, pipes, special castings, stop-valves, lamp-posts, and fire hydrants. It is located southwest of Machinery Hall, close to the barrier.

GUNPOWDER PILE DRIVER. No. 67.

Size, 35 feet by 12 feet.

GUNPOWDER PILEDRIVING CO., Philadelphia.

Is built in the open air to exhibit the operation of piledriving by means of gunpowder. It is situated southwest of Machinery Hall, between it and the barrier.

AUTOMATIC RAILROAD. No. 68.

Size, 20 feet by 150 feet.

CHARLES W. HUNT, New York.

Illustrations of the mode of unloading vessels by means of a railroad worked by a self-acting apparatus. Is situated west of Machinery Hall.

ENGLISH LOCOMOTIVE "JOHN BULL." No. 70.

Size, 10 feet by 121 feet, track.

PENNSYLVANIA RAILROAD COMPANY, Altoona, Pa.

The first locomotive that ran on the New Jersey Railroad in 1831.

GILLENDER & SONS' GLASSWARE BUILDING. No. 73.

Architect, JAMES H. WINDRIM.—Size, 60 feet by 90 feet.

GILLENDER & SONS, Philadelphia.

A one story frame house, situated west of Machinery Hall, on the walk to the Fifty-second Street entrance.

SAWMILL. No. 74.

Architects, PETTIT & WILSON, Philadelphia.—Size, 276 feet by 80 feet. Boiler house, 48 feet by 30 feet.

UNITED STATES CENTENNIAL COMMISSIONERS.

Exhibits direct-acting steam saw machines and gang saws. Is on Fountain Avenue, west of Machinery Hall, and consists of a one story frame open building, with a boiler house attached.

SAWMILL. No. 75.

Size, 22 feet by 36 feet.

E. W. ROSS & CO., Fulton, N. Y.

Is situated southwest of Machinery Hall, near Fountain Avenue. Is a one story frame building, with boiler house, and exhibits a direct-acting circular saw.

CAMPBELL PRINTING PRESS BUILDING. No. 76.

Architect, ALEXANDER B. BARY.—Size, 88 feet by 144 feet.

CAMPBELL PRINTING PRESS AND MANUFACTURING CO., Brooklyn, N. Y.

The various printing presses manufactured by this company are exhibited in operation; the power is furnished by a thirty (30) horse-power engine and boiler.

SPECIAL BUILDINGS.

mens of type printing from the date of the invention, and of sunlight printing, are shown, and a complete printing office just as it was in 1776 is also in operation.

FULLER, WARREN, & CO.'S STOVE BUILDING. No. 77.

Size, 60 feet by 45 feet.

FULLER, WARREN, & CO., New York city, Chicago, Ill., Cleveland, O., and Troy, N. Y.

Located at the east end of Machinery Hall, and facing the Fountain of the Catholic Total Abstinence Society. It contains samples of stoves, heaters, and ranges in operation; is built of wood, one story high, surmounted by a cupola.

LIBERTY STOVE WORKS. No. 78.

Architect, C. C. PHILLIPS.—Size, 45 feet by 34 feet.

CHARLES NOBLE & CO., Philadelphia.

A one story frame building, located west of Machinery Hall, and south of the Catholic Total Abstinence Fountain, on Fountain Avenue; containing different varieties of heaters, stoves, and ranges manufactured by Noble & Co.

BOSTON "HERALD," AND BOSTON "DAILY ADVERTISER." No. 79.

Size, 29 feet by 16 feet.

A one story frame building, situated on Fountain avenue opposite northwest corner of Machinery Hall; used as the headquarters of the correspondents and attaches of the newspapers erecting it.

CATHOLIC TOTAL ABSTINENCE FOUNTAIN. No. 80.

Architect, HERMAN KIRN, Philadelphia.

Situated at the junction of Fountain Avenue and the Avenue of the Republic, at the northwestern corner of Machinery Hall. In design it is a circular platform, with four arms projecting at right angles, terminating in four smaller circular platforms. From the centre of the large circle rises a marble rockwork sixteen feet high, with a diameter of eighteen feet at base, on which stands a statue of Moses smiting the rock. The water descends from numerous fissures into a basin forty feet in diameter. On each of the circular platforms is a drinking fountain, twelve feet in height and eight feet eight inches in diameter, surrounded with statues nine feet high, representing Father Mathew, Charles Carroll, Archbishop John Carroll, and Commodore John Barry. It has been erected by contributions made by the numerous societies forming the Catholic Total Abstinence Union of America.

TURKISH CAFÉ. No. 82.

Architect, PIERRE MONTANI.—Size, 51 feet by 65 feet.

TURKISH COMMISSION.

An octagonal building, with a coffee-room, parlors, and bazaars. Is a onestory frame building, situated on a walk between Fountain Avenue and the Avenue of the Republic, near their junction north of Machinery Hall.

PENNSYLVANIA STATE BUILDING. No. 83.

Architects, H. J. SCHWARZMANN, HUGH KAFKA.—Size, 97 feet by 55 feet.

A two story frame building, with a tower, of Gothic style. It faces the Lake, between Fountain Avenue and the Avenue of the Republic; contains reception-rooms and offices for the use of the State Commissioners and visitors.

HUMPHREYS'

Homeopathic Medicine Co.,

Humphreys' Homeopathic Specifics, Humphreys'
Veterinary Specifics, Humphreys' Witch
Hazel Oil and Marvel of Healing.

Dealers in Homeopathic Books and Medicines, Tinctures, Triturations, Sugar of Milk, Pellets, Labels, Bell's Homeopathic Cocoa, etc.

No. 562 BROADWAY, NEW YORK.

HUMPHREYS' HOMEOPATHIC SPECIFICS.

Prices of Single Vials and Cases.

CURES

No.	CURES	CENTS.
1.	Fever, Congestion, Inflammations	25 or 50
2.	Worm Fever, Worm Colic, or Disease	25 "
3.	Colic, Crying and Wakefulness of Infants	25 "
4.	Diarrhoea of Children and Adults	25 "
5.	Dysentery, Gripings, Bilious Colic	25 "
6.	Cholera, Cholera Morbus, Nausea, Vomiting	25 "
7.	Coughs, Colds, Hoarseness, Bronchitis	25 "
8.	Toothache, Faceache, Neuralgia	25 "
9.	Headache, Sick Headache, Vertigo	25 "
10.	Dyspepsia, Deranged Stomach, Costiveness	25 "
11.	Suppressed Menses, Scanty, or Delaying	25 "
12.	Leucorrhœa, Bearing Down, Profuse Menses	25 "
13.	Croup, Hoarse Cough, Difficult Breathing	25 "
14.	Salt Rheum, Eruptions, Erysipelas	25 "
15.	Rheumatism, Pain in Back, Side, or Limbs	25 "
16.	Fever and Ague, Intermittent Fever	25 "
17.	Piles, Internal or External, Blind or Bleeding	25 "
18.	Ophthalmia, Weak or Inflamed Eyes	25 "
19.	Catarrh, Acute or Chronic, Dry or Flowing	25 "
20.	Whooping-Cough, Spasmodic Cough	25 "
21.	Asthma, Oppressed, Difficult Breathing	25 "
22.	Ear Discharges, Hardness of Hearing	25 "
23.	Scrofula, Swellings and Ulcers	25 "
24.	General Debility, or Physical Weakness	25 "
25.	Dropsey, Fluid Accumulations	25 "
26.	Sea-Sickness, Nausea, Vomiting	25 "
27.	Urinary Diseases, Gravel, Renal Calculi	25 "
28.	Nervous Debility, Seminal Weakness	50
29.	Sore Mouth, or Canker	25 "
30.	Urinary Incontinence, Wetting the Bed	25 "
31.	Painful Menses, Pruritus	25 "
32.	Diseases of the Heart, Palpitations, etc.	1 00
33.	Epilepsy and Spasms, St. Vitus' Dance	1 00
34.	Diphtheria, or Ulcerated Sore Throat	50
35.	Chronic Congestions, Headaches	50

HOMEOPATHIC SPECIFICS.

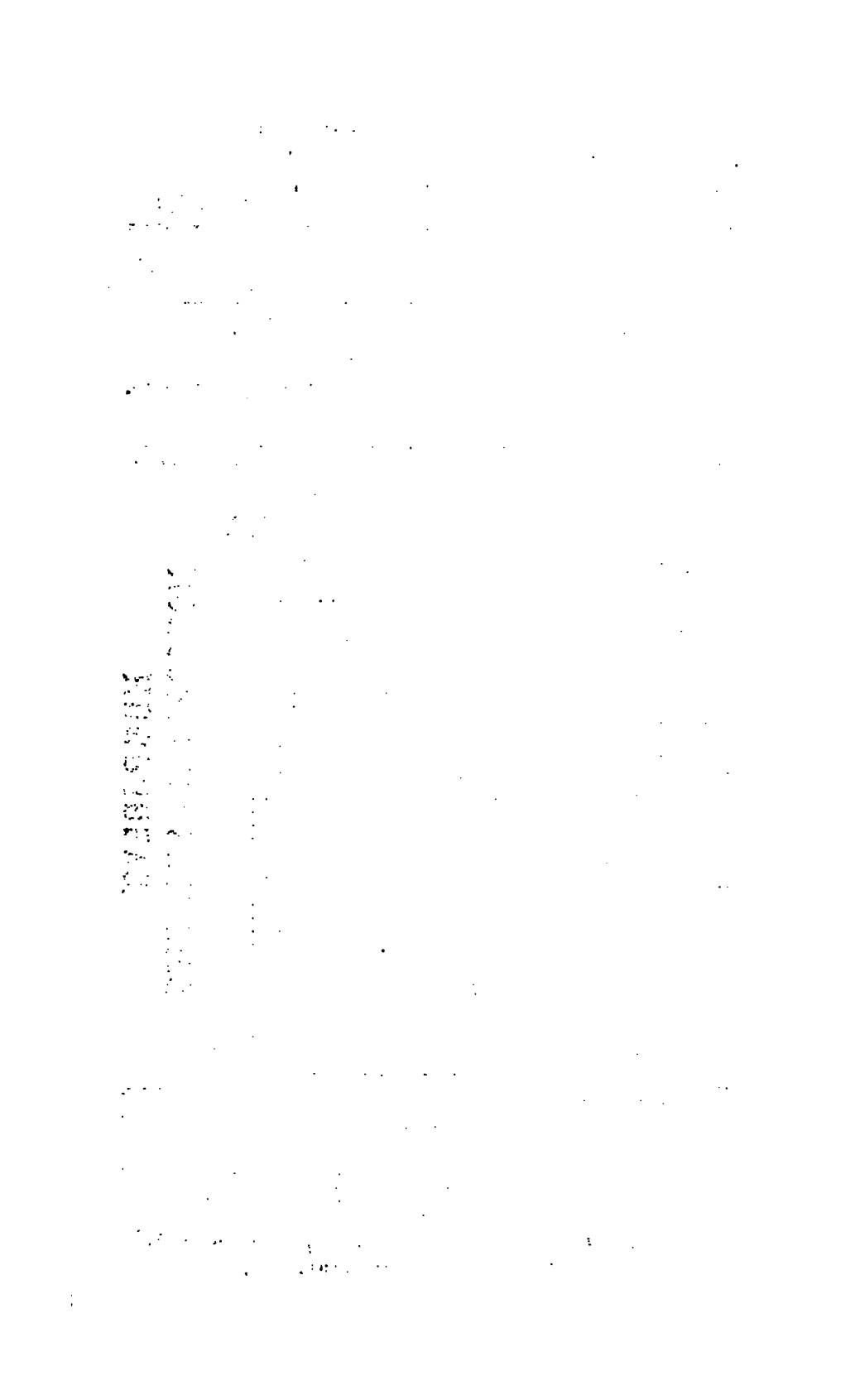
HUMPHREYS'

HUMPHREYS' HOMEOPATHIC SPECIFICS.

FAMILY CASES.

No.	PRICE.
1. With 35 Large Three-drachm Vials, ROSEWOOD CASE, and Humphreys' Homeopathic Mentor (New Book).	\$12 00
2. With 35 Large Three-drachm Vials, MOROCCO CASE, and Specific Homeopathic Manual (Small Book).	10 00
4. With 20 Large Three-drachm Vials, MOROCCO CASE, and Specific Homeopathic Manual.	6 00
5. With 20 Large Three-drachm Vials, PAPER CASE, and Specific Homeopathic Manual.	5 75
15. With 8 Two-drachm Vials, SINGLE-FLAT (pocket), and Manual.	2 75

These Cases and Medicines are sent by express or mail,
free on receipt of the price.



POP CORN BUILDINGS. Nos. 84, 164.

Architects, H. J. SCHWARZMANN, HUGH KAFKA.—Size, 41 feet by 32 feet each.
J. A. BAKER, Dayton, Ohio.

One of these buildings is situated on Fountain Avenue opposite the northern extremity of the Lake; the other is on Agricultural Avenue, east of and opposite the New England Farmers' Home and Modern Kitchen. They are devoted exclusively to the sale of pop corn; are built of wood, one story high.

AMERICAN NEWSPAPER EXHIBITION. No. 85.

Architect, M. J. MORAILL, Brooklyn, N. Y.—Size, 70 feet by 46 feet.
GEO. P. ROWELL & Co., New York City.

A two-story frame structure of Swiss architecture, on Fountain Avenue, near the Lake. It contains a large hall, and a reading-room supplied with newspapers from all parts of the United States.

COLONEL LIENARD'S GEORAMA. No. 86.

Designer, COL. LIENARD, Paris.—Size, area 1250 square feet.

An open-air exhibit, models of the cities of Paris and Jerusalem, in gypsum. The contour of the ground is shown, and the streets appear fully delineated. It is in the centre of Fountain Avenue, at the head of the Lake.

NEW YORK "TRIBUNE" BUILDING. No. 89.

Architect, E. E. RATH.—Size, 30 feet by 21 feet.
NEW YORK TRIBUNE, New York.

A small octagonal wooden building, with verandas and a high tower-like roof. It is located close to the French Restaurant and the Lake, and is used as an office for the correspondents and reporters of "The Tribune."

"TROIS FRÈRES PROVENÇAUX" RESTAURANT. No. 90.

Architect, LEHMAN, of Paris.—Size, 177 feet by 110 feet.
LOUIS GOYARD, Proprietor.

A two story frame structure, situated on the corner of Belmont and Fountain Avenues. It has large garden surroundings, and is a duplicate of the restaurant of the same name in Paris as regards its management.

SONS OF TEMPERANCE FOUNTAIN. No. 91.

Size, 25 feet in diameter.

This fountain is built of wood, the structure enclosing it being circular in form, and it is situated at the junction of Fountain and Belmont Avenues.

WORLD'S TICKET OFFICE. No. 93.

Architect, H. J. SCHWARZMANN.—Size, 60 feet square.
COOK, SON, & JENKINS, London, New York, and Philadelphia.

Situated immediately north of the eastern end of Machinery Hall. It is hexagonal in form, and contains a main hall and four private offices. Tickets to all parts of the world are offered for sale, and ornamental articles manufactured in Palestine are exhibited.

PRESSED FUEL COMPANY'S BUILDING. No. 95.

Polygon, 24 feet in diameter.
E. F. LOISEAU, Philadelphia.

Constructed of iron and situated in a garden plot on the Avenue of the Republic, west of the Lake and opposite to Machinery Hall. It exhibits the fuel in a state of combustion, to demonstrate its economy and adaptability.

SPECIAL BUILDINGS.

CENTENNIAL BOARD OF FINANCE OFFICE. No. 96.

Architect, H. J. SCHWARZMANN.—Size, 140 feet by 212 feet.

A one story frame building, situated on the left hand side of the main entrance to the Exhibition grounds, and occupied by the Board of Finance for the transaction of daily business.

U. S. CENTENNIAL COMMISSION OFFICE. No. 97.

Architect, H. J. SCHWARZMANN.—Size, 192 feet by 140 feet.

Located on the right hand side of the main entrance to the Exhibition grounds. It is built of wood, one story high, and is used as a business office by the Centennial Commission.

BARTHOLDI'S FOUNTAIN. No. 98.

Architect, BARTHOLDI, of Paris.—Size, basin, 26 feet in diameter; height, 30 feet, statue, 11 feet.

Situated in the Esplanade in front of the main entrance to the grounds.

JERUSALEM BAZAAR. No. 99.

Architects, NACHLY & BROS., Jerusalem.—Size, 12 feet by 8 feet.

NACHLY & BROS., Jerusalem.

The proprietors are Syrian Christian natives, who exhibit fancy work made from olive wood, the trees having grown on the Mount of Olives, Mount Hebron, Valley of the Jordan and Jericho. It is a one story building, situated on Fountain Avenue at the northern extremity of the Lake.

BISHOP RICHARD ALLEN'S MONUMENT. No. 106.

Size, base 6 feet by 6 feet; height, 16 feet.

Erected in memory of the Rev. Richard Allen, founder and first bishop of the African Methodist Episcopal Church; situated between Fountain and State Avenues, west of the United States Government Buildings.

CANADIAN LOG HOUSE. No. 109.

Size, 40 feet by 64 feet.

CANADIAN COMMISSION.

Is one story high, constructed of logs, and located close by the British Government Buildings.

ARKANSAS STATE BUILDING. No. 110.

Architect, ALEXANDER B. BARY.—Octagonal; 82 feet in diameter, 5000 square feet in area.

One story high, constructed of wood, with cupola, located north of the Catholic Total Abstinence Fountain, and will contain an exhibition of State productions, relics, and descriptions of ancient works.

WEST VIRGINIA STATE BUILDING. No. 112.

Size, 115 feet by 40 feet.

Northwest of the Catholic Total Abstinence Fountain, built of wood, two stories high. Headquarters for State Commissioners and visitors from West Virginia.

SPANISH GOVERNMENT BUILDING. No. 113.

Decagonal; 50 feet in diameter.

A one story frame building, situated on the Avenue of the Republic, west of the Catholic Total Abstinence Fountain. Intended as headquarters of the Spanish Officers and soldiers, and a resort for Spaniards visiting the Exhibition.

SPANISH EXHIBITION BUILDING. No. 114.

Architect, ALEXANDER B. BARY.—Size, 80 feet by 100 feet.

Constructed of wood, in a style similar to Machinery Hall; adjacent to Spanish Government Building.

JAPANESE BAZAAR. No. 115.

Architect, MATSUO-EHE, Tokio.—Size, 102 feet by 48 feet.

This building, usually called the Japanese Government Building, is intended to represent the bazaars or shops of Tokio. The wood and other articles that enter into its composition, and also the vases and flowers in the surrounding garden, were imported from Japan, and all the work has been done by Japanese artisans. It is situated on Agricultural Avenue, east of the Judge's Hall, and north of the Public Comfort Building.

MISSISSIPPI STATE BUILDING. No. 116.

Size, 42 feet by 25 feet.

Situated on State Avenue, opposite and west of the Japanese Dwelling.

GEORGE'S HILL RESTAURANT. No. 117.

Architects, H. J. SCHWARZMANN, HUGH KAFKA.—Size, 112 feet by 72 feet.
TALMAN & KOHN, Philadelphia.

Located in the western portion of the grounds, on George's Hill, in the vicinity of the State buildings. It is a one story structure, built of wood, and is also called the Hebrew Restaurant.

CALIFORNIA STATE BUILDING. No. 118.

Size, 55 feet by 105 feet.

A two story frame building, situated on State Avenue, opposite the British Government Buildings. It contains accommodations for the State Commissioners and visitors, also a large hall for the purpose of exhibiting specimens of the agricultural productions of California.

NEW YORK STATE BUILDING. No. 119.

Architects, CROFF & CAMP.—Size, 60 feet by 34 feet.

The Commissioners of the State of New York have offices in this building. It is a two story structure, surrounded by about half an acre of grounds.

BRITISH GOVERNMENT BUILDINGS. Nos. 120, 121, 122.

Architect, THOMAS HARRIS, of London.—Size, No. 1, 5000 sup. feet; No. 2, 1200 sup. feet.

These edifices have been erected for the use of the members of the Royal Commission. The large one is the residence of the Commissioners and delegates, while the smaller furnishes accommodations for the members of the staff. They are built in a picturesque, half-timbered style, essentially English, and are located north of Machinery Hall. A bake house and laundry is also attached to the above.

OHIO STATE BUILDING. No. 126.

Architects, HEARD & SONS, Cleveland, O.—Size, 45 feet by 44 feet, and annex, 60 feet by 40 feet.

A two story stone pavilion, located at the junction of State and Belmont Avenues. It supplies accommodation for the State Commissioners.

1 Hoffman, A. O., Thompson, Wm., and others, Springfield, O.—Springfield limestone, course No. 16.

2 McNally, Wm. G., Cleveland, Ohio.
—Coat of arms of Ohio carved from Berea stone.

3 Berea Stone Co., Berea, Ohio.—Berea sandstone, course Nos. 1 and 2.

4 Hurst, J. R., Cleveland, Ohio.—Independence sandstone, course No. 4.

5 Ford, O. D., Cleveland, Ohio.—Eldred sandstone, course No. 3.

SPECIAL BUILDINGS.

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INDIANA STATE BUILDING. No. 127.

Size, 50 feet by 42 feet.

A two-story frame building, on State Avenue, opposite the United States Government Buildings, containing accommodations for the State Commissioners and for visitors from Indiana.

ILLINOIS STATE BUILDING. No. 128.

Architects, WHEELOCK & THOMAS.—Size, 60 feet by 40 feet.

Situated on State Avenue, north of the United States Government Buildings; the headquarters of the Illinois Commissioners.

WISCONSIN STATE BUILDING. No. 129.

Size, 50 feet by 40 feet.

For the accommodation of the State Commissioners. Located on State Avenue, north of the United States Government Exhibition Buildings.

MICHIGAN STATE BUILDING. No. 130.

Size, 50 feet by 44 feet.

On State Avenue, opposite the United States Government Buildings. Contains reception rooms and offices for the Commissioners and visitors.

NEW HAMPSHIRE STATE BUILDING. No. 131.

Size, 30 feet by 40 feet; two projections 9 feet by 15 feet each.

In the style of an Italian villa, two stories in height, and containing ten rooms, the roof protected by an awning and used for an outlook.

CONNECTICUT STATE BUILDING. No. 132.

Architect, DONALD G. MITCHELL.—Size, 30 feet by 40 feet.

This cottage is erected in the old Colonial style, somewhat modified, and is designed for the use of the citizens and exhibitors of the State of Connecticut. It is situated on State Avenue, not far distant from the United States Government Exhibition Buildings.

MASSACHUSETTS STATE BUILDING. No. 133.

Size, 85 feet by 56 feet.

Situated on State Avenue, opposite the New York State Building; is built of wood, two stories high, and contains offices and rooms for Commissioners and visitors.

DELAWARE STATE BUILDING. No. 134.

Size, 54 feet by 34 feet.

Built on the Swiss-Gothic style, from native woods of the State. It is occupied by the State Commissioners, the first floor being used for reception rooms, while the second floor is devoted to business purposes. Is situated on State Avenue, north of the British Commission, opposite the New York State Commission.

MARYLAND STATE BUILDING. No. 135.

Size, 92 feet by 60 feet.

For the use of the State Commissioners and visitors. Situated on State Avenue, north of the British Government Buildings, and is built of wood two stories high.

IOWA STATE BUILDING. No. 137.

Size, 40 feet by 60 feet.

Located on State Avenue, opposite the California State Building. A frame house, two stories high, accommodating the State Commissioners.

MISSOURI STATE BUILDING. No. 138.

Architect, L. C. MILLER, St. Louis.—Size, 58 feet by 48 feet.

Headquarters of the Missouri Commissioners. Constructed of wood, two stories high. Located on State Avenue, opposite George's Hill Restaurant.

BREWERS' BUILDING. No. 153.

Architect, H. J. SCHWARZMANN.—Size, 272 feet by 96 feet.

G. BERGNER, Philadelphia.

Constructed of wood in the style of Machinery Hall, and situated on Lansdowne drive, opposite the northeast corner of Agricultural Hall. It contains a model brewery, and exhibits the several processes of manufacturing malt liquors.

BUTTER AND CHEESE FACTORY. No. 154.

Size, 100 feet by 116 feet.

A model factory, three stories high, built of wood, and situated east of the Agricultural Building, between it and Lansdowne drive.

TEA AND COFFEE PRESS EXTRACT BUILDING. No. 155.

Architects, HAYES & MCIVOR, Elmira, N. Y.—Size, 100 feet by 45 feet.

A two-story frame building, composed of four observatories connected by verandas. Located opposite the southeast corner of the Agricultural Building; and devoted to the exhibition of the process of making coffee, tea, and other extracts, by means of pressure caused by the expansion of the materials used.

SPECIAL BUILDINGS.**THE AMERICAN RESTAURANT. No. 156.**

Architects, H. J. SCHWARZMANN, HUGH KAFKA.—Size, 300 feet by 200 feet.
TOBIASON & HEILBRUN, Philadelphia.

Situated between Agricultural and Horticultural Halls. The seating capacity is five thousand. The banquet room accommodates six hundred guests. The waiters speak various languages. There is a pavilion devoted to ice cream, etc. A bill of fare will be served either *à la carte* or *table d'hôte*.

KANSAS STATE BUILDING. No 157.

Architect, E. F. KARR.—Size, 132 feet square.

This structure is intended for the accommodation of the Commissioners from the State of Kansas, and also for exhibition purposes. It is a two story wooden building, containing an exhibition hall, private rooms and offices, and is situated opposite the Women's Pavilion.

THE "SOUTH" RESTAURANT. No. 158.

Architect, H. J. SCHWARZMANN.—Size, 182 feet by 92 feet.
E. MERCER, Atlanta, Ga.

Situated on the northwest corner of State and Belmont Avenues, and is a one story frame building.

NEW JERSEY STATE BUILDING. No. 159.

Architect, CARL PFEIFFER, New York.—Size, 56 feet by 82 feet.

A two story wooden building erected for the accommodation of the New Jersey State Commissioners, containing offices and private rooms. It is erected on Belmont Avenue, adjacent to the Women's Pavilion. Messrs. Hall & Son, of Perth Amboy, N. J., furnished the brick in the chimney, and Messrs. Maurer & Brevier, of Perth Amboy, the tiles used in the roofing of the building.

WOMEN'S SCHOOL HOUSE, OR KINDERGARTEN. No. 161.

Architect, JAS. P. SIMS.—Size, 35 feet by 18 feet.

Situated northeast of the Women's Pavilion. Contains specimens of school work, and illustrates the operation of Kindergarten teaching.

NEW ENGLAND FARMER'S HOME AND MODERN KITCHEN. No. 163.

Size, 49 feet by 35 feet.
MISS E. B. SOUTHWICK, Boston.

A representation of a New England farmer's home 100 years ago, combined with a modern kitchen, thus illustrating 1776 and 1876. It is one story high, and situated on the corner of State and Agricultural Avenues.

GERMAN RESTAURANT. No. 170.

Architect, H. J. SCHWARZMANN.—Size, 200 feet by 150 feet.
PHILIP J. LAUBER, Philadelphia.

Contains three acres for garden arrangements, and is situated north of Horticultural Hall, on Lansdowne drive.

CENTENNIAL WATER-WORKS.

Architect, FREDERICK GRAFF, Philadelphia.—Size, 70 feet by 39 feet; chimney 80 feet high.

Located on the banks of the Schuylkill River, near the Belmont steamboat landing; a one-story brick building, containing a Worthington duplex engine, on exhibition, which is capable of pumping 6,000,000 gallons per day; and a smaller one with the capacity of 1,000,000 gallons per day.

BOOT-BLACKING PAVILIONS.

Architects, BALDERSTON & HUTTON, Philadelphia.—Octagon, 25 feet in diameter.
DEPARTMENT OF PUBLIC COMFORT COMPANY, Limited.
W. MARSH KASSON, Chairman, Philadelphia.

Five one story frame buildings, located in different portions of the grounds. Newspapers, periodicals, photographs, umbrellas for sale and hire, stationery, fruits, etc., are on sale. There are also telegraph and messenger stations and rolling chairs.

CLARK & COMPANY'S BUILDING.

Size, 40 feet square.

CLARK & CO.

Built for the purpose of exhibiting self coiling shutters, and situated between Belmont Avenue and Lansdowne drive. It is a one story frame building surmounted by a tower.

WARREN FOUNDRY AND MACHINE SHOP.

Size, 25 feet by 25 feet.

PHILLIPSBURG, N. J.

Represents cast iron gas and water pipes, unprotected from the weather, no building being considered necessary. The exhibit is located southwest of Machinery Hall, between it and the barrier.

TUFT'S SODA-WATER PAVILIONS.

Architect, F. H. SHEPHERD.—Size, first, 24 feet by 14 feet. Second, 36 feet square.
JAS. W. TUFTS, Boston.

These pavilions, three in number, are located in different parts of the grounds, and are built of wood, one story high ; used for the sale of soda-water.

MINERAL ANNEXES.

Architects, HENRY PETTIT & Jos. M. WILSON, Philadelphia.—Size, 40 feet by 576 feet; 35 feet by 312 feet.

Contain minerals from all parts of the country. Are two in number, built of wood, and are located on the south side of the east end of the Main Exhibition Building.

POLICE STATIONS.

Architect, H. J. SCHWARZMANN.—Size (5), 82 feet by 37 feet ; (1) 167 feet by 80 feet.

Five of these stations are one story frame buildings, and one is two stories high. They are similar in construction, containing offices and dormitories for the members of the police force, and cells for prisoners. The largest station house has a court-room and alderman's office. They are located in different portions of the grounds.



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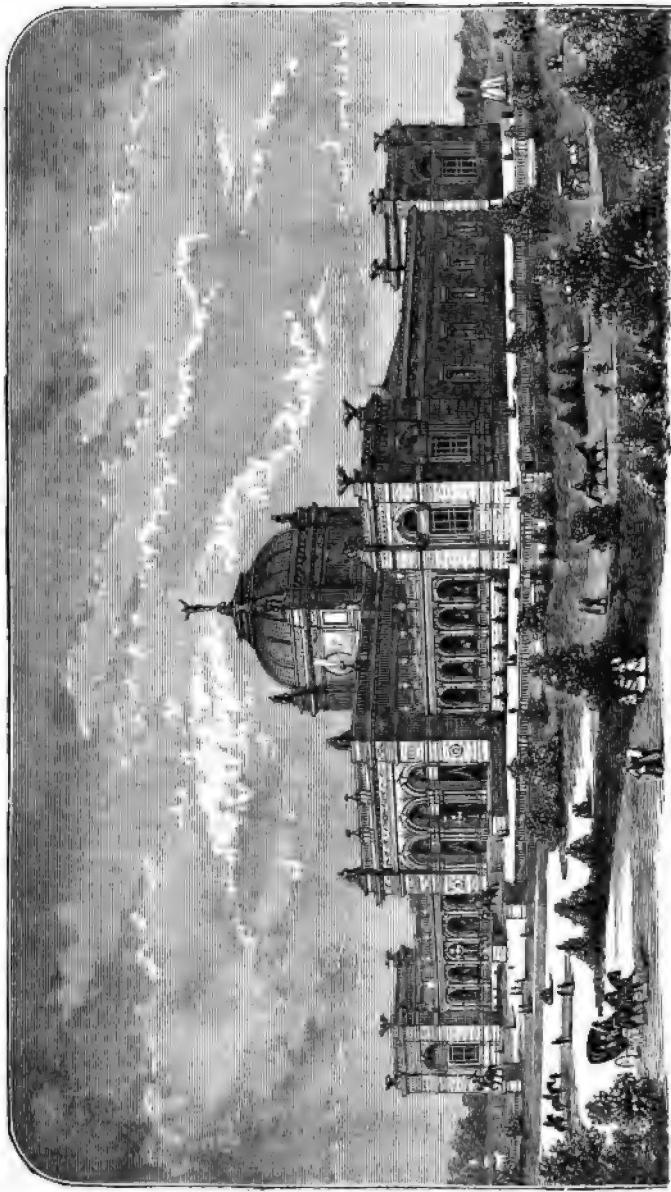
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ART GALLERY, OR MEMORIAL HALL.

UNITED STATES CENTENNIAL COMMISSION.

INTERNATIONAL EXHIBITION,

1876.

OFFICIAL CATALOGUE

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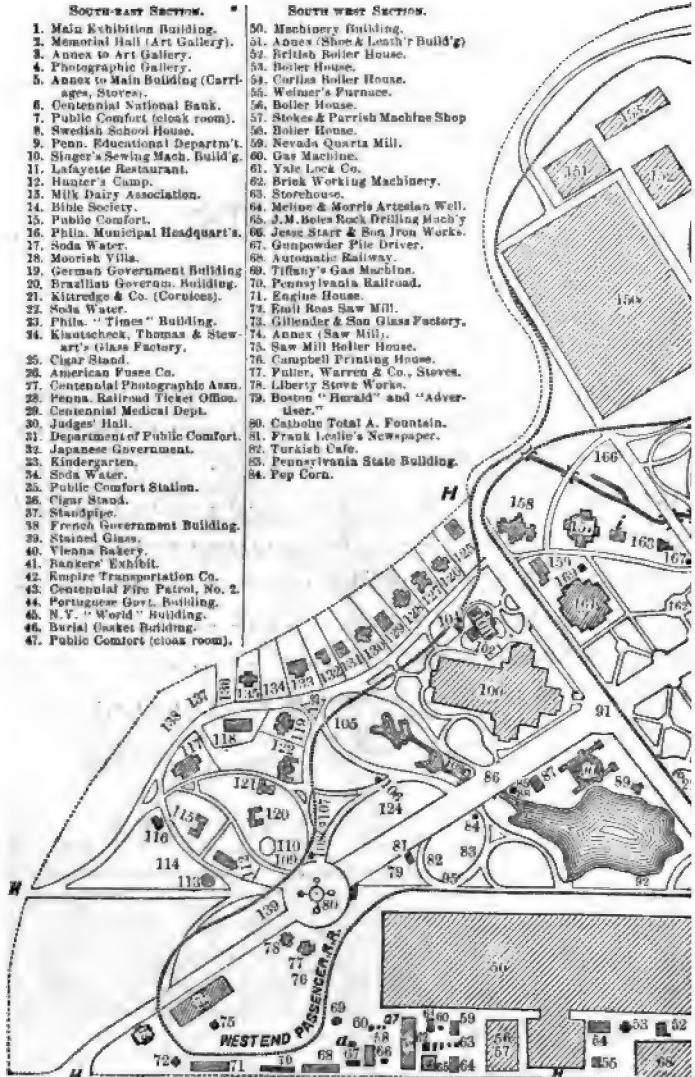
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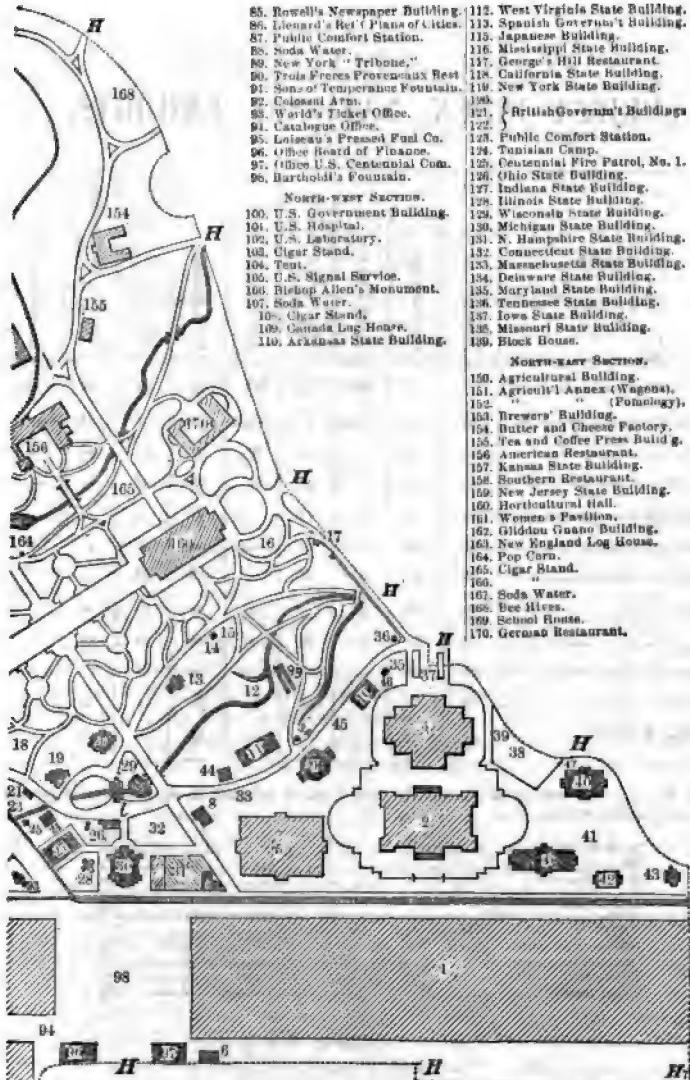
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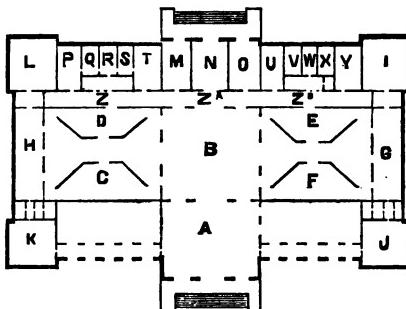
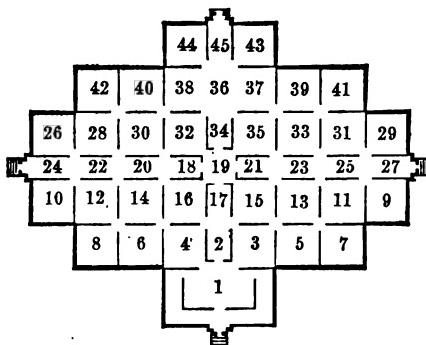
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MEMORIAL HALL, built at a cost of \$1,500,000, by the State of Pennsylvania and City of Philadelphia, is placed at the disposal of the Centennial Commission, to be used during the Exhibition as an Art Gallery, after which it is designed to make it the receptacle of an Industrial Art Museum, similar to the South Kensington Museum, at London. The design is modern renaissance, and the structure is fire-proof. It covers an acre and a half, and is 365 feet long, 210 feet wide, and 59 feet high, over a basement 12 feet high. A dome, rising 150 feet above the ground, surmounts the centre, capped by a colossal ball, from which rises the figure of Columbia. The main front of this building looks southward, displaying a main entrance in the centre consisting of three arched doorways, a pavilion on each end, and two arcades connecting the pavilions with the centre. The entrance is 70 feet wide, to which there is a rise of 13 steps. Each of the doorways is 40 feet high and 15 feet wide, opening into a hall. In each pavilion there is a window 12½ feet by 34 feet, eight in all, which will be used for the display of stained glass, glass paintings, etc. The arcades designed to screen the long walls of the galleries each consist of five groined arches, and form promenades looking outward over the grounds and inward over open gardens extending back to the main wall of the building. These garden-plots are each 90 feet by 36 feet, ornamented in the centre with fountains, and intended to display statuary. The rear or north front of the building is of the same general character as the main front, but, in place of the arcade, has a series of arched windows, twelve in number, with the entrance in the centre. Between the pavilions is the grand balcony, a promenade 275 feet long and 45 feet wide, elevated 40 feet above the ground, and overlooking to the northward the grounds of the Park. On each front of the buildings the entrances open into halls, 82 feet long, 60 feet wide, and 53 feet high. These, in turn, open into the centre hall, 83 feet square, the ceiling rising over it 80 feet in height. From the east and west sides of this central hall extend the galleries, each 98 feet long, 48 feet wide, and 35 feet high. These galleries have temporary divisions for the better display of paintings, and, with the central hall, form a grand hall 287 feet long, and 83 feet wide, capable of comfortably accommodating 8000 persons. From the galleries

doorways open into two smaller galleries, 89 feet long and 28 feet wide. These open north and south into apartments connecting with the pavilion rooms, and forming two side-galleries 210 feet long. Along the whole length of the north side of the main galleries and central hall extends a corridor 14 feet wide, opening on its north line into a series of rooms, twenty-three in number, designed for studios and smaller exhibition rooms. All the galleries and the central hall are lighted from above; the pavilions and studios from the sides. The pavilions and central hall are designed especially for the exhibition of sculpture. This building gives 75,000 square feet of wall space for painting, and 20,000 square feet of floor space for statues, etc. The sky-lights throughout are double, the upper being of clear glass and the under of ground-glass.

The erection of the building was begun July 4th, 1874, and finished March 1st, 1876.

Great as is the space afforded in the Memorial Hall, the applications from American and foreign artists have proved so greatly in excess of its capacity as to require the erection of a much more spacious building. This, though only of brick, harmonizes architecturally with the Memorial Hall, and is to be permanent. It stands just in the rear of the original Art Gallery, and communicates with it. It affords 60,000 square feet of wall space available for paintings, and contains 30 galleries, each 40 feet square, besides 4 galleries, each 100 feet long by 54 feet wide, and two transverse central corridors, 20 feet wide.



MEMORIAL HALL.—Ground Plan.

A. Italy.	J. Germany.	T. Great Britain.
B. United States, Gt. Britain, Germany, France, Italy.	K. United States.	U. Italy.
C. United States.	L. Great Britain.	V. Italy.
D. Great Britain.	M. Belgium.	W. Italy.
E. France.	N. Italy.	X. United States.
F. Germany.	O. Belgium.	Y. United States.
G. Austria.	P. Great Britain.	Z. Great Britain.
H. Spain and Sweden.	Q. Great Britain.	Z ^A . United States.
I. France.	R. Great Britain.	Z ^B . Germany and France.
	S. Great Britain.	

EXTENSION TO ART GALLERY.—Ground Plan.

1. Italy.	16. United States. Superintendent's Office.	29. Portugal. Brazil.
2. Italy.	17. Italy.	30. United States.
3. Italy.	18. France.	31. Spain.
4. Italy.	19. Italy.	32. France.
5. Netherlands.	20. United States.	33. Belgium.
6. Germany.	21. France. Netherlands.	34. France.
7. Norway. Denmark.	22. United States.	35. France.
8. United States.	23. Belgium. Netherlands.	36. France.
9. Argentine Republic. Chili. Mexico.	24. United States.	37. France.
10. United States.	25. Spain. Sweden.	38. France.
11. Sweden.	26. Canada.	39. United Belgium.
12. United States.	27. Portugal. Argentine Republic. Brazil.	40. United States.
13. Netherlands.	28. United States.	41. Belgium.
14. United States.		42. United States.
15. Netherlands.		43. France.
		44. France.
		45. France.

SYNOPSIS OF THE CLASSIFICATION.

LOCATION.	DEPARTMENTS.	CLASSES.	GROUPS.
MAIN BUILDING.	I. MINING AND METALLURGY.	100—109 110—119 120—129	Minerals, Ores, Stone, Mining Products. Metallurgical Products. Mining Engineering.
	II. MANUFACTURES.	200—205 206—216 217—227 228—234	Chemical Manufactures. Ceramics, Pottery, Porcelain, Glass, etc. Furniture, etc. Yarns and Woven Goods of Vegetable or Mineral Materials. Woven and Felted Goods of Wool, etc. Silk and Silk Fabrics.
	III. EDUCATION AND SCIENCE	235—241 242—249 250—257 258—264 265—271 272—279 280—284 285—291 292—296	Clothing, Jewelry, etc. Paper, Blank Books, Stationery. Weapons, etc. Medicine, Surgery, Prothesis. Hardware, Edge Tools, Cutlery, and Metallic Products. Fabrics of Vegetable, Animal, or Mineral Materials. Carriages, Vehicles, and Accessories.
ART GALLERY.	IV. ART.	300—309 310—319 320—329 330—339 340—349	Educational Systems, Methods, and Libraries. Institutions and Organizations. Scientific and Philosophical Instruments and Methods. Engineering, Architecture, Maps, etc. Physical, Social, and Moral Condition of Man.
MACHINERY BUILDING.	V. MACHINERY.	400—409 410—419 420—429 430—439 440—449 450—459	Sculpture. Painting. Engraving and Lithography. Photography. Industrial and Architectural Designs, etc. Ceramic Decorations, Mosaics, etc.
AGRICULTURAL BUILDING.	VI. AGRICULTURE.	500—509 510—519 520—529 530—539 540—549 550—559 560—569 570—579 580—589 590—599	Machines, Tools, etc., of Mining, Chemistry, etc. Machines and Tools for working Metal, Wood, and Stone. Machines and Implements of Spinning, Weaving, etc. Machines, etc., used in Sewing, Making Clothing, etc. Machines for Printing, Making Books, Paper Working, etc. Motors, Power Generators, etc. Hydraulic and Pneumatic Apparatus. Railway Plant, Rolling Stock, etc. Machinery used in Preparing Agricultural Products. Aerial, Pneumatic, and Water Transportation. Machinery, and Apparatus, especially adapted to the requirements of the Exhibition.
HORTICULTURAL BUILDING.	VII. HORTICULTURE.	600—609 610—619 620—629 630—639 640—649 650—662 665—669 670—679 680—689 690—699	Arboriculture and Forest Products. Pomology. Agricultural Products. Land Animals. Marine Animals, Fish Culture, and Apparatus. Animal and Vegetable Products. Textile Substances of Vegetable or Animal origin. Machines, Implements, and Processes of Manufacture. Agricultural Engineering and Administration. Tillage and General Management.
		700—709 710—719 720—729 730—739	Ornamental Trees, Shrubs, and Flowers. Hot Houses, Conservatories, Graperies. Garden Tools, Accessories of Gardening. Garden Designing, Construction, and Management.

CLASSIFICATION.

DEPARTMENT IV.—ART.

SCULPTURE.

- CLASS 400.—Figures and groups in stone, metal, clay, or plaster.
CLASS 401.—Bas-reliefs, in stone or metal; electrotype copies.
CLASS 402.—Medals, pressed and engraved; electrotypes of medals.
CLASS 403.—Hammered and wrought work—*repoussé* and *rehaussé* work, embossed and engraved relief work.
CLASS 404.—Cameos, intaglios, engraved stones, dies, seals, etc.
CLASS 405.—Carvings in wood, ivory, and metal.

PAINTING.

- CLASS 410.—Paintings in oil on canvas, panels, etc.
CLASS 411.—Water color pictures; aquarelles, miniatures, etc.
CLASS 412.—Frescoes, cartoons for frescoes, etc.
CLASS 413.—Painting with vitrifiable colors. Pictures on porcelain, enamel, and metal.

ENGRAVING AND LITHOGRAPHY.

- CLASS 420.—Drawings with pen, pencil, or crayons.
CLASS 421.—Line engravings from steel, copper, or stone.
CLASS 422.—Wood engravings.
CLASS 423.—Lithographs, zincographs, etc.
CLASS 424.—Chromo-lithographs.

PHOTOGRAPHY.

- CLASS 430.—Photographs on paper, metal, glass, wood, fabrics, or enamel surfaces.
CLASS 431.—Prints from photo-relief plates, carbon prints, etc.
CLASS 432.—Photo-lithographs, etc.
CLASS 433.—Photographic apparatus and supplies.

INDUSTRIAL AND ARCHITECTURAL DESIGNS, MODELS, AND DECORATIONS.

- CLASS 440.—Industrial designs.
CLASS 441.—Architectural designs; studies and fragments, representations and projects of edifices; restorations from ruins and from documents.
CLASS 442.—Decoration of interiors of buildings.
CLASS 443.—Artistic hardware and trimmings, artistic castings, forged metal work for decoration, etc.

DECORATION WITH CERAMIC AND VITREOUS MATERIALS, MOSAIC AND INLAID WORK.

- CLASS 450.—Mosaic and inlaid work in stone.
CLASS 451.—Mosaic and inlaid work in tiles, tessaræ, glass, etc.
CLASS 452.—Inlaid work in wood and metal, parquetry, tables, etc.
CLASS 453.—Stained glass.
CLASS 454.—Miscellaneous objects of art.

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Specimens of all the above-mentioned fabrics and threads can be seen in the show-case of Cheney Brothers, in the American Silk Department of the Centennial Exhibition in the Main Building.

UNITED STATES.

Sculpture, Oil Paintings.

Sculpture.

- 1 Bavier, F.—Pope Pius IX (Bronze bust). 400
- 2 Bretchman, Ed., Philadelphia, Pa.—Jas. L. Claghorn (bronze medallion). 401
- 3 Caverly, C.—John Brown (Bronze bust). 400
- 4 Cooper, Edw.—Peter Cooper (Marble medallion). 401
- 5 Cassett, Waugh, Miss Ida, Philadelphia, Pa.—Medallion. 401
- 6 Ellis, S., Bridgeport, Conn.—Elias Howe (bronze statue). 400
- 7 Freeborne, S. M., New York, N. Y.—The Vision of St. Christopher (marble). 400
- 8 French, Daniel Chester, Concord, Mass.—The Minute Man (plaster cast). 400
- 9 Freeman, J. E., Boston, Mass.—A Study of an Angel. 400
- 10 Griffin, Julia.—Dr. Chapin (Bust). 400
- 11 Gerardin, G., Philadelphia, Pa.
a Bouquet of flowers (marble). 400
b Basket of flowers (marble). 400
- 12 Granger, Pearson E., Lancaster, Pa.—Specimens of monumental lettering. 400
- 13 Grace, Joseph, New York, N. Y.
a First Step (marble statue). 400
b Infant Bacchus (marble statue). 400
c St. Mary (marble medallion). 401
d Model of a monument to Dr. Wales. 400
- 14 Garrdent, A.—Wm. M. Evarts (bust). 400
- 15 Hartley, I. S., New York, N. Y.—The Young Samaritan (marble statue). 400
- 16 Jacquier, Eli, Cincinnati.—New bust of Shakespeare (marble). 400
- 17 Kretschman, E. A., Philadelphia, Pa.—Portraits in relief (bronze). 401
- 18 Kemeyns, Edward, New York, N. Y.
a Coyote and Raven (plaster). 400
b Wild Cat and Possum (plaster). 400
c Under the Wolf Skin (plaster). 400
- 19 Miller, W., Philadelphia, Pa.—Portraits of the Signers of the Declaration of Independence (56 bronze medallions). 401
- 20 Meynen, F., Philadelphia, Pa.—Virgin and Child (marble statue). 400
- 21 ——, New York, N. Y.—Gottschalk, the American Pianist (bust in marble). 400
- 22 Mundhenk, A., Cincinnati, Ohio.—Group, life-size, representing Auld Lang Syne (marble). 400
- 23 Page, Wm., New York, N. Y.—Bust of Shakespeare (bronze). 400

- 24 Perkins, G. F. T., New York, N. Y.—Sir Walter Scott (medallion portrait). 401
- 25 Reniers, P. C., Pittsburg, Pa.
Col. Thos. A. Scott (bust in marble). 400
- 26 Rogers, J., New York, N. Y.—Statuettes, groups in stone, designs for the lawn. 400
- 27 Rogers, R., Rome, Italy.
a Ruth (marble statue). 400
b Nydia (marble statue). 400
- 28 Richards, D., Chicago, Ill.
a Il Penseroso (marble bust). 400
b The Barber Dentist (plaster group). 400
c Mrs. Laird Colyer (plaster bust). 400
d Disgusted (plaster group). 400
e Satisfaction (plaster group). 400
- 29 Reinhart, B. F.
a Latona and Children (heroic size). 400
b General Lee (medallion). 401
- 30 St. Gaudens, Aug., New York, N. Y.
a Admiral Farragut (bronze bust). 400
b Hiawatha (marble statue). 400
c Hon. Wm. M. Evarts (marble bust). 400
- 31 Seelig & Co., Williamsburg, N. Y.—Statuary (in spelter). 400
- 32 Turini, G., New York, N. Y.
a Iris (marble). 400
b Angelica and Medora (marble). 400
c The Boy Shakespeare (marble). 400
d Model Emblematic of the Emancipation of Slavery. 400
- 33 Volk, L. W., Chicago, Ill.
a Abraham Lincoln (marble bust). 400
b Stephen A. Douglas (marble bust). 400
- 34 Whitney, Anne, Boston, Mass.
a Roma. 400
b Charles Sumner. 400
- 35 Warner, Olin L., New York, N. Y.—Edwin Forrest (plaster medallion). 401
- 36 Pickes, D. M.—Bronze medallion. 401
- 37 Rowe, Geo. A., Philadelphia, Pa.—Impressions of seals, gems, and medals. 404

Oil Paintings.

- 38 Armstrong, D. W., New York, N. Y.
a Twilight on the Tiber. 410
b Column of St. Mark. 410
- 39 Alexander, Francis, Boston, Mass.—F. Alexander (portrait). 410
- 40 Arnold, Miss Catharine H., New York, N. Y.—The late Dr. Comstock (portrait). 41

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- 41 Anderson, A. A.**
a Cairo. 410
b Roumanian Peasant Girl. 410
- 42 Audubon, J. J., Philadelphia, Pa.**
a Animal painting. 410
b Animal painting. 410
- 43 Andrews, E. F., Paris, France.**
a Child's Portrait. 410
b Portrait of Gentleman. 410
c Portrait of Gentleman. 410
d Portrait of Gentleman. 410
e Portrait of Gentleman. 410
f La petite Leonie. 410
g Portrait of Lady. 410
- 44 Arnold, Mrs. Esther P., Springport, Mich.**—Vicar of Wakefield addressing his Family. 410
- 45 Alexander, Fanny, Boston, Mass.**
a Nella Feeding her Doves. 410
b Settembre. 410
c Una Preghiera. 410
d Madonna. 410
- 46 Adams, Miss, Boston, Mass.—Head of an Old Man.** 410
- 47 Brown, Chas. V., Philadelphia, Pa.—Wm. J. Clark, Jr. (portrait).** 410
- 48 Brown, Harry B., Portland, Me.—On the Coast of Maine.** 410
- 49 Brainerd, Mrs. M. N., Lansing, Mich.**—“Indian Telegraph” Sunset in the Gila Country. 410
- 50 Briscoe, F. D., Philadelphia, Pa.—Breezy Day off Dieppe.** 410
- 51 Bridgeman, C. J., Brooklyn, N. Y.—Lady (portrait).** 410
- 52 Brenner, Carl C., Louisville, Ky.—Landscape.** 410
- 53 Bell, John W., New York, N. Y.—View on Lake Champlain (landscape).** 410
- 54 Benton, Dwight, Cincinnati, O.—Evening on the Ohio.** 410
- 55 Bessom, Ella L., Pittsburg, Pa.**
a Ophelia. 410
b The Last Toilet of Cleopatra. 410
- 56 Bonfield, V. de V., Philadelphia, Pa.—Drifting Snow.** 410
- 57 Bristol, J. B., New York, N. Y.—Mount Oxford from Lake Memphramagog, Canada.** 410
- 58 Bannister, E. M., Providence, R. I.—Under the Oaks (landscape).** 410
- 59 Brooks, A. F., Chicago, Ill.—23d Psalm.** 410
- 60 Bruecke, George, New York, N. Y.—The Discovery of America by Columbus.** 410
- 61 Bispham, Henry C., New York, N. Y.**
a The Stampede. 410
b American Deer. 410
- 62 Bruss, Geo. De F., New York, N. Y.—Ideal portrait.** 410
- 63 Blashfield, E. H., Brooklyn, N. Y.—Treasure Trove.** 410
- 64 Blackwell, Miss S. E., New York, N. Y.—The Flower's Name.** 410
- 65 Brill, David, New York, N. Y.—Walther von der Vogelweide.** 410
- 66 Bunner, Andrew L., Munich, Bavaria.—Landscape.** 410
- 67 Bigelow, D. F., Chicago, Ill.**
a American Scenery. 410
b Landscape. 410
- 68 Burton, William John, Chicago, Ill.**
a The Irish Rocky Glen. 410
b Rafting on the Lower Rhine. 410
c View on the Hudson. 410
- 69 Brooks, Samuel, San Francisco, Cal.—California Salmon.** 410
- 70 Bierstadt, Albert, New York, N. Y.**
a The Great Trees, Mariposa Grove, Cal. 410
b Mt. Hood, Oregon. 410
c The Settlement of California, Bay of Monterey, June 3d, 1770. 410
d Spring in California. 410
e Yosemite Valley from Glacier Point Trail. 410
f Western Kansas. 410
- 71 Baldwin, Albert A., New York, N. Y.—Owl and Ducks.** 410
- 72 Benson, Eugene, Rome, Italy.**
a Interior of St. Mark's. 410
b The Strayed Maskers. 410
- 73 Beard, W. H.**
a Lo, the Poor Indian. 410
b March of Silenus. 410
- 74 Brucken.—Summer Morning.** 410
- 75 Bridgeman, F. A.**
a Bringing in the Corn. 410
b Kybelian Women. 410
c Flower of the Amen. 410
d Story-Teller. 410
e Women on the Nile. 410
- 76 Burt, Martha.—Homely Flowers.** 410
- 77 Baker.**
a Portrait of Elliott. 410
b Portrait of Mrs. Andrew Stuart. 410
- 78 Bacon, Henry, Boston, Mass.—The Boston Boys and General Gage, 1775.** 410
- 79 Brown, W. Warren, Boston, Mass.—Spurwink River.** 410
- 80 Brackett, W. M., Boston, Mass.**
a The Rise. 410
b The Leap. 410
c Last Struggle. 410
d Landed. 410
- 81 Baker, Miss M. K., Boston, Mass.—Azalcas.** 410
- 82 Boot, Elizabeth, Boston, Mass.—Head.** 410
- 83 Brown, G. L., Boston, Mass.—Sunset, Genoa.** 410
- 84 Boughton, Geo. H., Philadelphia, Pa.—Going to Seek his Fortune.** 410
- 85 Birch, Thomas, Philadelphia, Pa.**
a North-easter in Mid-ocean. 410
b Coast Scene. 410
c Perry's Victory. 410
- 86 Burnes, C. M., Philadelphia, Pa.—The Power Bchind the Throne.** 410
- 87 Blois, F. B. de, Boston, Mass.**
a Winter Morning, Lincoln, Italy. 410
b October Day. 410
- 88 Bartlett, G. H., Boston, Mass.**
a Church Door. 410
b Leaf. 410
- 89 Beard, J. H.**
a “Many a slip” etc. 410
b Attorney and his Client. 410
c Out all Night. 410
- 90 Billings, E. T., Boston, Mass.**
a Wendell Phillips. 410
b Wheelwright Shop. 410
- 91 Christensen, C. C. A., Ephraim, Utah.—Mormon Emigrants crossing the Plains with Handcarts.** 410

UNITED STATES.

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- 92 Cardozo, Thomas de, New York, N. Y.**
 a Portrait. 410
 b Portrait. 410
- 93 Cole, J. Foxcroft, Boston, Mass.**
 a Pastoral Scene in Normandy. 410
 b Landscape and Cattle. 410
 c Coast of Normandy. 410
 d Midnight in Melrose. 410
- 94 Craig, Thos. B., Philadelphia, Pa.—Indian Summer.** 410
- 95 Culverhouse, J. M., Philadelphia, Pa.**
 a Excursion by Torch and Moonlight. 410
 b Market Scene by Candle and Moonlight. 410
- 96 Carlin, John, New York, N. Y.—Ignis Fatuus, the Symbol of Pleasure.** 410
- 97 Cole, Thomas.**
 a The Cross and the World. 410
 1. The Start in Life. 410
 b The Cross and the World. 410
 2. Adversity. 410
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 3. Triumph of the Cross. 410
- 98 Cameron, Miss Kate, Paris, France.—Italian Girl.** 410
- 99 Currier, I. F., Munich, Bavaria.—Study of a Head.** 410
- 100 Catlin, George.—Indian Pictures (a collection).** 410
- 101 Catskill, J. W., New York, N. Y.**
 a Twilight, Catskill Mountains. 410
 b Lake George, from Sabbath Day Point. 410
 c Wooded Stream. 410
- 102 Colman, Saml., New York, N. Y.**
 a The Merchant of Laghout. 410
 b Twilight on the Western Plains. 410
- 103 Crano, F. F. de, Philadelphia, Pa.—The Celestial Model.** 410
- 104 Creifelds, Richard, Munich, Bavaria.—Study.** 410
- 105 Chase, Frank R., Smyrna, Mich.—Gen. U. S. Grant (portrait).** 410
- 106 Cropsey, J. F.**
 a Old Mill. 410
 b Church, Isle of Wight. 410
 c Italy. 410
- 107 Collyer, Vincent.—Columbia River, Cascade Mountains.** 410
- 108 Clowes, C. M., New York, N. Y.—Cattle.** 410
- 109 Champney, Benj., Boston, Mass.**
 a Artists' Brook, North Conway, Mass. 410
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- 110 Cabot, Ed. C., Boston, Mass.**
 a Pudding-Stone Boulder. 410
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- 111 Champney, J. W., Boston, Mass.**
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- 112 Cobb, Darius, Boston, Mass.—Cyrus Cobb (portrait).** 410
- 113 Chan, Will M., Munich, Bavaria.**
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- 114 Couran, Mrs.—French Village.** 410
- 115 Dart, M.—Portrait.** 410
- 116 Dahlgreen, Carl, Salt Lake City, Utah.—Early Morning View of Ophir Mining Camp, East Canyon Utah.** 410
- 117 De Voe, W. M., Urbana, O.—Hon. Rufus P. Spalding (portrait).** 410
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- 119 Deming, Miss Charlotte, New York, N. Y.—Salutation of 1876.** 410
- 120 Dougherty, Edw. D., Philadelphia, Pa.—Tennessee.** 410
- 121 Dielman, Frederick, Munich, Bavaria.—Study.** 410
- 122 Dolph, I. H., New York, N. Y.**
 a The Antiquarian. 410
 b Returning from Pasture. 410
- 123 Drexler A., New York, N. Y.—Scene from "King Lear."** 410
- 124 Doolittle, Edwin S., New York, N. Y.**
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- 125 DeGolier, Miss K. E., New York, N. Y.**
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- 126 DeHaas, William F., New York, N. Y.**
 a On Conception Bay, Newfoundland. 410
 b Off Guidi-Vidi near St. Johns, Newfoundland. 410
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- 127 DeHaas, M. F. H., New York, N. Y.**
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 b Drifted Ashore in a Fog. 410
 c Moonrise at Sunset. 410
- 128 De Bois, Charles E., New York, N. Y.—Willows at East Hampton.** 410
- 129 Dirksom, Frank, Peoria, Ills.**
 a City of Peoria, Ills. 410
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 c City of Burlington, Iowa. 410
- 130 De Luce.—A Dish for my Lord's Supper.** 410
- 131 Darrah, S. T., Boston, Mass.**
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- 132 Daniels, G. F., Boston, Mass.—Crown Point and the Narrows, Lake Champlain.** 410
- 133 Earle, John, Pittsburg, Pa.—Magdalene.** 410
- 134 Elliott, Charles L.—Edwin Forrest (portrait).** 410
- 135 Eakins, Thomas, Philadelphia, Pa.**
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 b Dr. Rand. 410
 c Chess Players. 410
- 136 Evans, De Scott, Cleveland, Ohio.—Miss Effie E. Elsler (portrait).** 410
- 137 Elkins, Henry A., Chicago, Ill.—Shasta, an extinct Volcano in California.** 410
- 138 Evans, B. R., Philadelphia, Pa.—Temple of Horror.** 410

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- 139 Ewell, D. Jerome, Boston, Mass.**
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b Downs near Ostend. 410
- 140 Enneking, Jno. E., Boston, Mass.**
a—Moonlight on the Canal della Guidiccca, Venice. 410
- 141 Fitch, John L., New York, N. Y.—In the Woods.** 410
- 142 Fisher, F. J., Washington, D. C.—Christ Mourning over Jerusalem.** 410
- 143 Feldman, Chas., Philadelphia, Pa.—Natural Birds.** 410
- 144 Fassitt, Mrs. C. A., Washington, D. C.—Chief-Judge Waite (portrait).** 410
- 145 Furness, Horace Howard, Philadelphia, Pa.**
a Rev. Dr. Furness (portrait). 410
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- 146 Frenchard, Edw., New York, N. Y.**
a—The stormy waves dashed high on a rock-bound coast." 410
- 147 Fletcher, Vincent.—Washington's Triumphant Entry into New York.** 410
- 148 Farris, W. A., Oil City, Pa.—Evening (landscape).** 410
- 149 Ford, Henry C., Chicago, Ill.—Forest Interior.** 410
- 150 Flagg, Jared B., New York.**
a Commodore Vanderbilt (portrait). 410
b Ideal Figure Picture. 410
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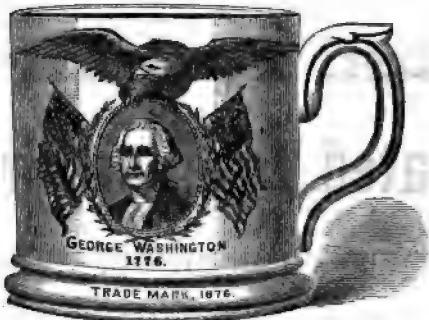
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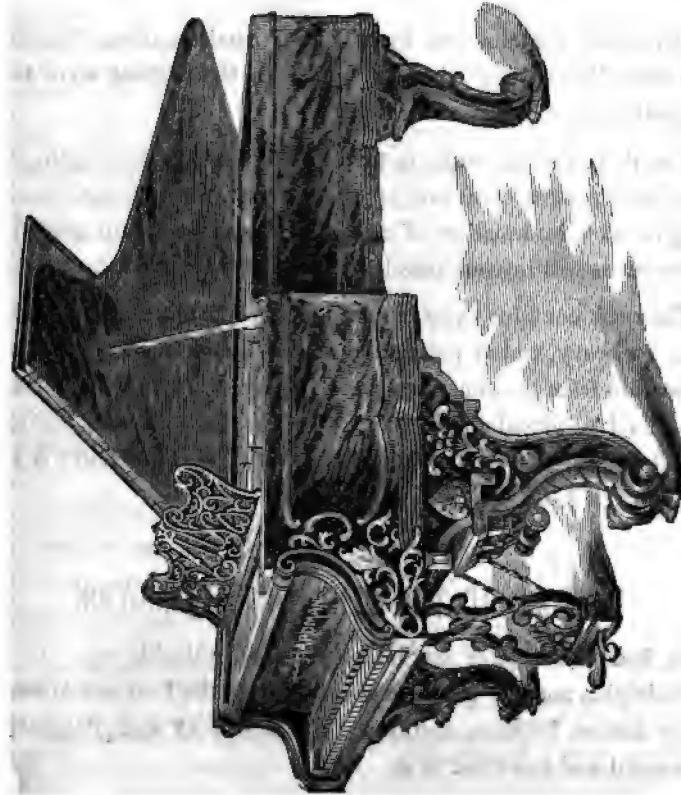
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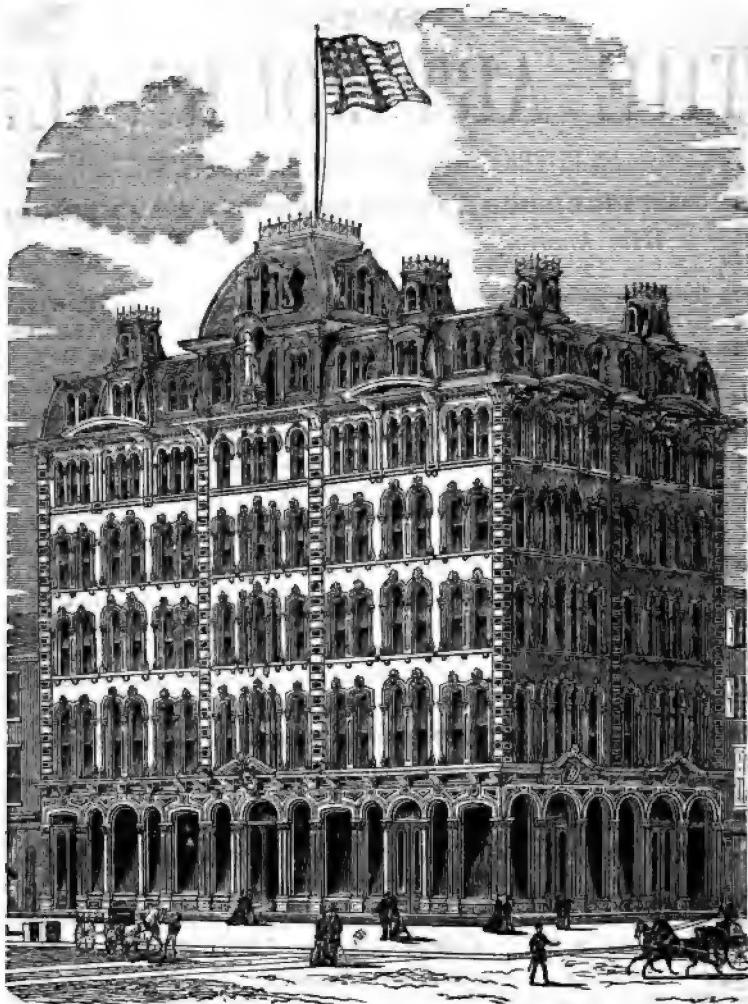
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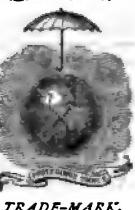
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	27.....845,802		25.....858,778
April	3.....857,956	October	2.....868,935
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	24.....858,270		23.....874,625
May	1.....869,542	November	30.....876,160
	8.....867,550		6.....908,580
	15.....877,450		13.....852,372
	22.....874,946		20.....847,816
June	29.....866,276	December	27.....886,248
	5.....873,782		4.....845,378
	12.....869,769		11.....1,042,716
	19.....880,348		18.....956,294
July	26.....883,846	January	25.....938,864
	3.....898,862		1.....938,987
	10.....867,574		8.....952,202
	17.....877,400		15.....958,019
August	24.....876,282	February	22.....969,911
	31.....874,216		29.....987,850
	7.....865,558		5.....998,030
	14.....875,982		12.....1,024,647
September	21.....880,488		19.....1,027,209
	28.....870,502		26.....1,014,766
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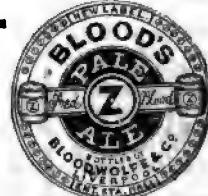
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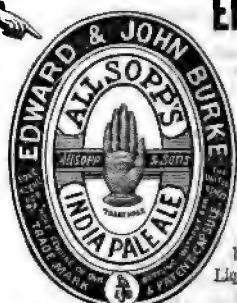
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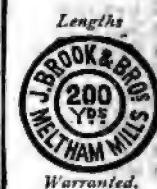
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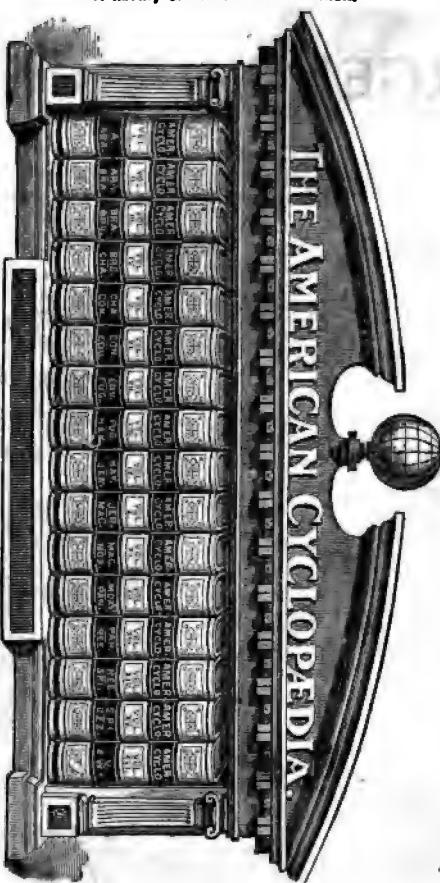
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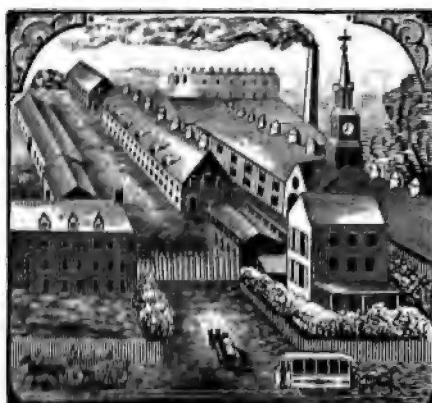
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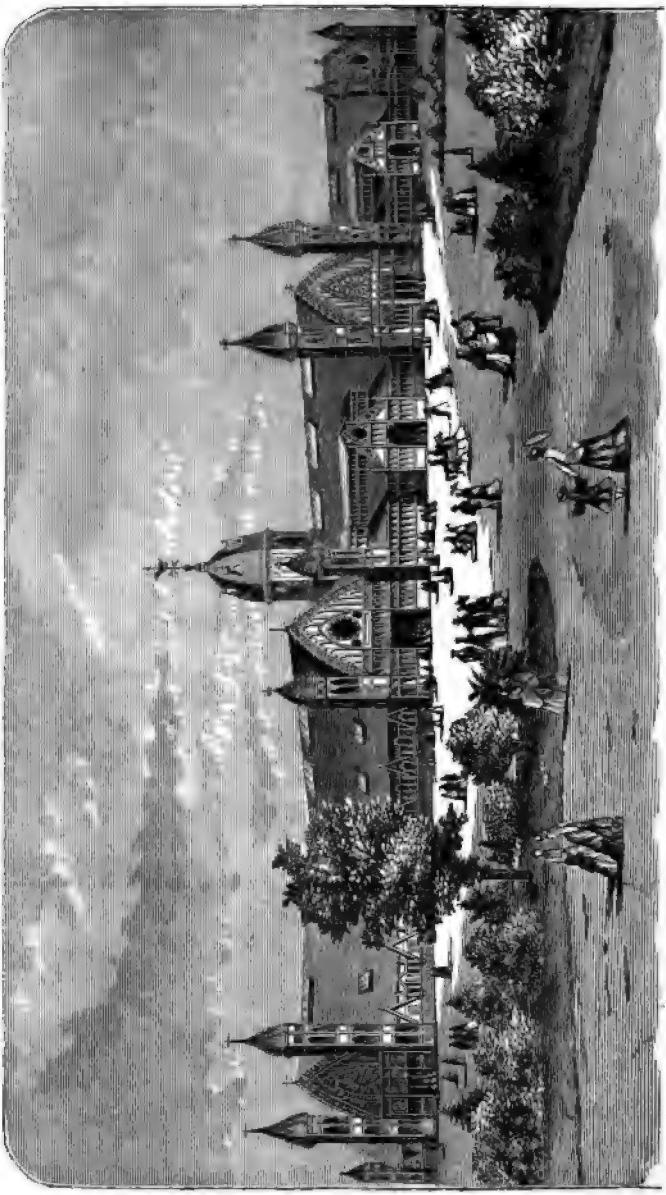
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AGRICULTURAL BUILDING.

UNITED STATES CENTENNIAL COMMISSION.

INTERNATIONAL EXHIBITION,

1876.

OFFICIAL CATALOGUE

DEPARTMENT OF AGRICULTURE.

DEPARTMENT OF HORTICULTURE.

PHILADELPHIA:

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1876

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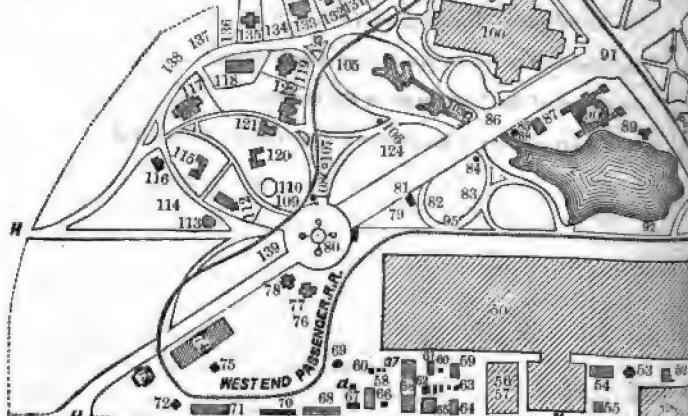
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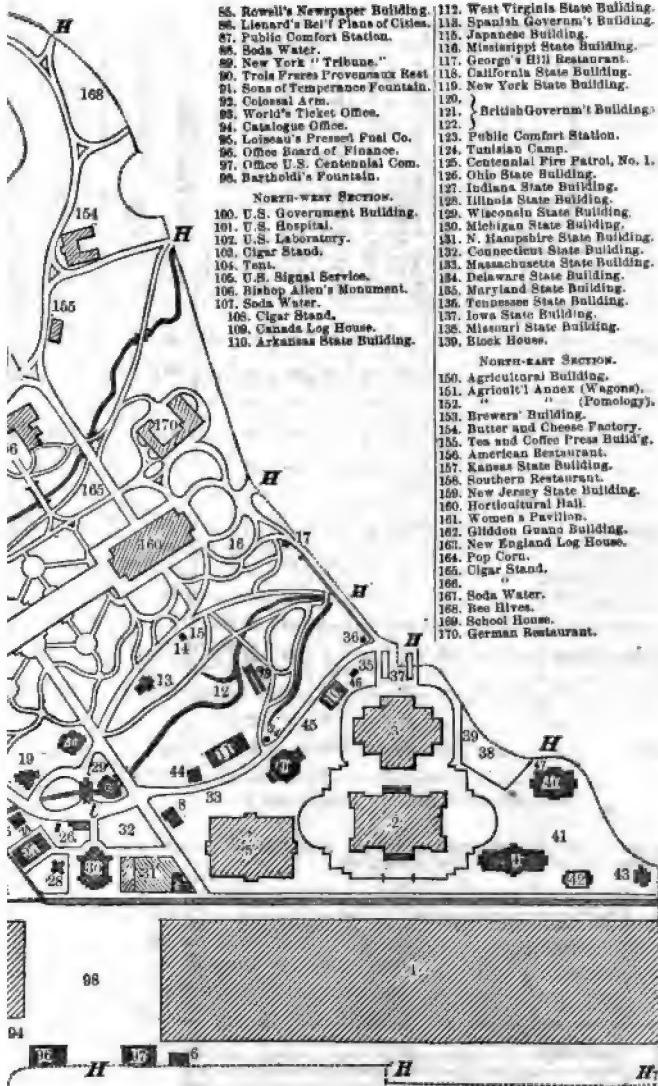
1. Main Exhibition Building.
2. Memorial Hall (Art Gallery).
3. American Library.
4. Photographic Gallery.
5. Annex to Main Building (Carriages, Stoves).
6. Centennial National Bank.
7. Public Comfort (cloak room).
8. Swedish School House.
9. Penn. Educational Department's.
10. Singer's Sewing Mach. Build.
11. Lafayette Restaurant.
12. United Camp.
13. Milk Dairy Association.
14. Bible Society.
15. Public Comfort.
16. Phila. Municipal Headquartrs.
17. Soda Water.
18. Moorish Villa.
19. German Government Building.
20. Brasilia Governm. Building.
21. Kittredge & Co. (Coriolos).
22. Soda Water.
23. Phila. "Times" Building.
24. Klantscheck, Thomas & Steuart's Glass Factory.
25. Cigar Stand.
26. American Fusee Co.
27. Centennial Photographic Assn.
28. Penna. Railroad Ticket Office.
29. Centennial Medical Dept.
30. Judges' Hall.
31. Department of Public Comfort.
32. Japanese Government.
33. Soda Water.
34. Soda Water.
35. Public Comfort Station.
36. Cigar Stand.
37. Standpipe.
38. French Government Building.
39. Stained Glass.
40. Vienna Bakery.
41. Bankers' Exhibit.
42. Empire Transportation Co.
43. Standard Fire Patrol, No. 2.
44. Portuguese Govt. Building.
45. N.Y. "World" Building.
46. Burial Chaske Building.
47. Public Comfort (cloak room).

SOUTH-WEST SECTION.

50. Machinery Building.
51. Annex (Shoe & Leather's Building).
52. Boiler House.
53. Boiler House.
54. Corliss Boiler House.
55. Weimer's Furnace.
56. Boiler House.
57. Stokes & Parrish Machine Shop.
58. Boiler House.
59. Nevada Quartz Mill.
60. Gas Machine.
61. Yale Lock Co.
62. G.W. Walking Machinery.
63. Stereoscope.
64. Melville & Morris Artesian Well.
65. J.M. Bois Rock Drilling Mach'y.
66. Jesus Starr & Son Iron Works.
67. Gunpowder Pile Driver.
68. Automatic Railway.
69. Tiffany's Gas Machine.
70. Pennsylvania Railroad.
71. Engine House.
72. Eunil Rose Saw Mill.
73. Eunil Rose & Son Glass Factory.
74. Annex (Saw Mill).
75. Saw Mill Boiler House.
76. Campbell Printing House.
77. Fuller, Warren & Co., Stoves.
78. Liberty Stove Works.
79. Boston "Herald" and "Advertiser."
80. Catholic Total A. Fountain.
81. Frank Leslie's Newspaper.
82. Turkish Cafe.
83. Pennsylvania State Building.
84. Pop Corn.



GROUND PLAN OF THE



INTERNATIONAL EXHIBITION.

SUBJECT INDEX, NATIONAL EXHIBITS.

DEPARTMENT VI.

NATIONS.	Abriculture and Forest Products.	Pomology.	Agricultural Products.	Land Animals.	Water Animals, Fish Culture, and Apparatus.	Animal and Vegetable Products.	Textile Substances of Vegetable or Animal Origin.	Machines, Implements, and Processes of Manufacture.	Agricultural Engineering and Administration.	Tillage and General Management.	Ornamental Trees, Shrubs, and Flowers.	Hot-houses, Conservatories, Glycerines.	Garden Tools, Accessories of Gardening.	Garden Designing, Construction and Management.
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* Metallurgical exhibition of France, page 36.

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Denmark.....	210
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Orange Free State.....	230
Luxemburg.....	230
China	231
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AGRICULTURAL HALL. No. 150.

Size, parallelogram, 820 by 540 feet.

Architect, JAMES H. WINDRIM, Philadelphia.

Contractor, PHILIP QUIGLEY, Wilmington, Del.

Wrought iron furnished by ALLISON & SONS, Philadelphia.

Erectors, BELL BROTHERS.

THE Agricultural Exhibition Building stands north of Horticultural Hall, on the eastern side of Belmont avenue. A novel combination of materials is illustrated in its construction. It consists of a long nave crossed by three transepts, all composed of Howe truss arches of Gothic form. The four courts inclosed between the nave and transepts, as also the four spaces at the corners of the building, having the nave and transepts for their sides, are roofed in and form spaces for exhibits. The building covers an area of above ten acres. Stock yards for the exhibition of horses, cattle, sheep, swine, poultry, etc., are in the vicinity of the exhibition grounds.

The contract was made July 26th, 1875, and the building was begun in September 1875, and finished in April, 1876. It cost \$260,000.

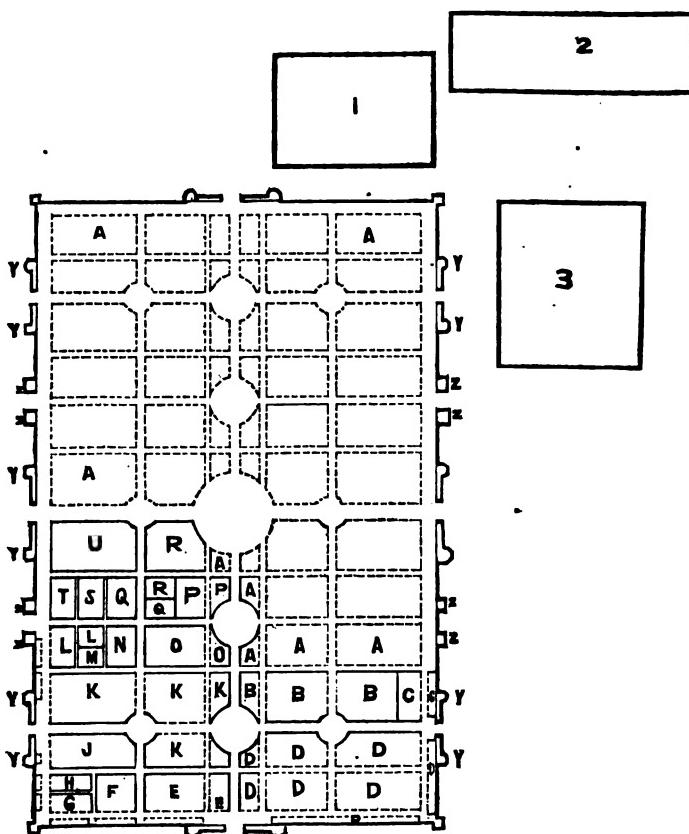
KEY TO THE NOTATION.

THE location of objects in the Agricultural Building is shown by a letter and figure, indicating the nearest column of the building. The letters—A, B, C, to T—designate the successive ranges of columns, proceeding eastward from the western wall across the width of the building; the figures, the number of the column in each range, counting northwardly from the southern wall, the entire length of the building, from 1 to 28. Thus C 5 is the column in the third range from the west, and the fifth from the southern end of the building. The northeasternmost column is T 28.

The class of the classification to which each exhibit belongs is indicated by the small figures at the end of the line.

AGRICULTURAL HALL.

Scale, 225 ft. to 1 in.



- A United States.
 - B Canada.
 - C Liberia.
 - D England.
 - E Germany.
 - F Austria.
 - G Japan.
 - H Venezuela.
 - I Netherlands

- K France.
L Sweden.
M Denmark.
N Norway.
O Brazil.
P Belgium.
Q Portugal.
R Spain.

- S Argentine Republic.
 T Chili.
 U Russia.
 Y Water-closets.
 Z Offices.
 1. Wagon Building.
 2. Brewers' Building.
 3. Pomological Building.

Total Length, 540 ft. Width, 820 ft. Height, 75 ft.

SYNOPSIS OF THE CLASSIFICATION.

LOCATION.	DEPARTMENTS.	CLASSES.	GROUPS.
N BUILDING.	I. MINING AND METALLURGY.	100—109 110—119 120—129	Minerals, Ores, Stone, Mining Products, Metallurgical Products, Mining Engineering.
	II. MANUFACTURES.	200—205 206—216 217—227 228—234 235—241 242—249 258—264 265—271 272—279 280—284 285—291 292—296	Chemical Manufactures. Ceramics, Pottery, Porcelain, Glass, etc. Furniture, etc. Varns and Woven Goods of Vegetable or Mineral Materials. Woven and Felted Goods of Wool, etc. Silk and Silk Fabrics. Clothing, Jewelry, etc. Paper, Blank Books, Stationery. Weapons, etc. Medicine, Surgery, Prothesis. Hardware, Edge Tools, Cutlery, and Metallic Products. Fabrics of Vegetable, Animal, or Mineral Materials. Carriages, Vehicles, and Accessories.
	III. EDUCATION AND SCIENCE	300—309 310—319 320—329 330—339 340—349	Educational Systems, Methods, and Libraries. Institutions and Organizations. Scientific and Philosophical Instruments and Methods. Engineering, Architecture, Maps, etc. Physical, Social, and Moral Condition of Man.
GALLERY.	IV. ART.	400—409 410—419 420—429 430—439 440—449 450—459	Sculpture. Painting. Engraving and Lithography. Photography. Industrial and Architectural Designs, etc. Ceramic Decorations, Mosaics, etc.
MACHINERY BUILDING.	V. MACHINERY.	500—509 510—519 520—529 530—539 540—549 550—559 560—569 570—579 580—589 590—599	Machines, Tools, etc., of Mining, Chemistry, etc. Machines and Tools for working Metal, Wood, and Stone. Machines and Implements of Spinning, Weaving, etc. Machines, etc., used in Sewing, Making Clothing, etc. Machinery for Printing, Making Books, Paper Working, etc. Motors, Power Generators, etc. Hydraulic and Pneumatic Apparatus. Railway Plant, Rolling Stock, etc. Machinery used in Preparing Agricultural Products. Aerial, Pneumatic, and Water Transportation. Machinery, and Apparatus, especially adapted to the requirements of the Exhibition.
AGRICULTURAL BUILDING.	VI. AGRICULTURE.	600—609 610—619 620—629 630—639 640—649 650—660 665—669 670—679 680—689 690—699	Arboriculture and Forest Products. Pomology. Agricultural Products. Land Animals. Marine Animals, Fish Culture, and Apparatus. Animal and Vegetable Products. Textile Substances of Vegetable or Animal origin. Machinery, Implements, and Processes of Manufacture. Agricultural Engineering and Administration. Tillage and General Management.
HORTICULTURAL BUILDING.	VII. HORTICULTURE.	700—709 710—719 720—729 730—739	Ornamental Trees, Shrubs, and Flowers. Hot Houses, Conservatories, Gheropies. Garden Tools, Accessories of Gardening. Garden Designing, Construction, and Management.

CLASSIFICATION.

DEPARTMENT VI.—AGRICULTURE.

ARBORICULTURE AND FOREST PRODUCTS.

- CLASS 600.—Timber and trunks of trees, entire or in transverse or truncated sections, with specimens of barks, leaves, flowers, seed vessels, and seed.
Masts, spars, knees, longitudinal sections of trees, railway ties, ship timber, lumber roughly sawn; as planks, shingles, lath, and staves.
Timber and lumber prepared in various ways to resist decay and combustion; as by injection of salts of copper and zinc.
- CLASS 601.—Ornamental woods used in decorating and for furniture; as veneers of mahogany, rosewood, ebony, walnut, maple, and madrona.
- CLASS 602.—Dyewoods, barks, and galls for coloring and tanning.
- CLASS 603.—Gums, resins, caoutchouc, gutta percha, vegetable wax.
- CLASS 604.—Lichens, mosses, fungi, pulu, ferns.
- CLASS 605.—Seeds, nuts, etc., for food and ornamental purposes.
- CLASS 606.—Forestry.—Illustrations of the art of planting, managing, and protecting forests. Statistics.
- CLASS 607.—Fruit trees and shrubs.

POMOLOGY.

- CLASS 610.—Fruits of temperate and semi-tropical regions; as apples, pears, quinces, peaches, nectarines, apricots, plums, grapes, cherries, strawberries, and melons.
- CLASS 611.—Tropical fruits and nuts, oranges, bananas, plantains, lemons, pineapples, pomegranates, figs, cocoanuts.

AGRICULTURAL PRODUCTS.

- CLASS 620.—Cereals, grasses, and forage plants.
- CLASS 621.—Leguminous plants and esculent vegetables.
- CLASS 622.—Roots and tubers.
- CLASS 623.—Tobacco, hops, tea, coffee, spices, condiments, herbs.
- CLASS 624.—Seeds and seed vessels.

LAND ANIMALS.

- CLASS 630.—Horses, asses, mules.
- CLASS 631.—Horned cattle.
- CLASS 632.—Sheep.
- CLASS 633.—Goats, alpaca, llama, camel.
- CLASS 634.—Swine.
- CLASS 635.—Poultry and birds.
- CLASS 636.—Dogs and cats.
- CLASS 637.—Wild animals.
- CLASS 638.—Insects, useful and injurious. Honey bees, cochineal, silk-worms.

MARINE ANIMALS, FISH CULTURE, AND APPARATUS.

- CLASS 640.**—Marine mammals.—Seals, cetaceans, etc., specimens living in aquaria, or stuffed, salted, preserved in alcohol, or otherwise.
- CLASS 641.**—Fishes, living or preserved.
- CLASS 642.**—Pickled fish, and parts of fish used for food.
- CLASS 643.**—Crustaceans, echinoderms, beche de mer.
- CLASS 644.**—Mollusks, oysters, clams, etc., used for food.
- CLASS 645.**—Shells, corals, and pearls.
- CLASS 646.**—Whalebone, shagreen, fish-glue, isinglass, sounds, fish-oil.
- CLASS 647.**—Instruments and apparatus of fishing.—Nets, baskets, hooks, and other apparatus used in catching fish.
- CLASS 648.**—Fish culture.—Aquaria, hatching pools, vessels for transporting roe and spawn, and other apparatus used in fish breeding, culture, or preservation.

ANIMAL AND VEGETABLE PRODUCTS.

(Used as food or as materials.)

- CLASS 650.**—Sponges, seaweed, and other growths used for food or in the arts.
- CLASS 651.**—The dairy.—Milk, cream, butter, cheese.
- CLASS 652.**—Hides, furs, and leather, tallow, oil, and lard, ivory, bone, horn, glue.
- CLASS 653.**—Eggs, feathers, down.
- CLASS 654.**—Honey and wax.
- CLASS 655.**—Animal perfumes; as musk, civet, ambergris.
- CLASS 656.**—Preserved meats, vegetables, and fruits. Dried, or in cans or jars.
Meat and vegetable extracts.
- CLASS 657.**—Flour; crushed and ground cereals, decorticated grains.
- CLASS 658.**—Starch and similar products.
- CLASS 659.**—Sugar and syrups.
- CLASS 660.**—Wines, alcohol, and malt liquors.
- CLASS 661.**—Bread, biscuits, crackers, cakes, confectionery, cocoa, chocolate, etc.
- CLASS 662.**—Vegetable oils, oil cake.

TEXTILE SUBSTANCES OF VEGETABLE OR ANIMAL ORIGIN.

- CLASS 665.**—Cotton on the stem, in the boll, ginned, and baled.
- CLASS 666.**—Hemp, flax, jute, ramie, etc., in primitive forms and in all stages of preparation for spinning.
- CLASS 667.**—Wool in the fleece, carded, and in bales.
- CLASS 668.**—Silk in the cocoon and reeled.
- CLASS 669.**—Hair, bristles.

MACHINES, IMPLEMENTS, AND PROCESSES OF MANUFACTURE.

- CLASS 670.**—Tillage.—Manual implements, spades, hoes, rakes. Animal power machinery, plows, cultivators, horse-hoes, clod-crushers, rollers, harrows. Steam power machinery, plows, breakers, harrows, cultivators.
- CLASS 671.**—Planting.—Manual implements, corn-planters and hand-drills. Animal power machinery, grain and manure drills, corn and cotton planters. Steam power machinery, grain and manure drills.
- CLASS 672.**—Harvesting.—Manual implements; grain-cradles, sickles, reaping-hooks. Animal power machinery, reapers and headers. Mowers, tedders, rakes, hay elevators, and hay loaders.
Potato diggers.
- CLASS 673.**—Preparatory to marketing.—Thrashers, clover-hullers, corn-shellers, winnowers, hay, cotton, flax, jute, ramie, wine, oil, and sugar-making apparatus. Cleaners and smutters. Horse powers.

CLASSIFICATION.

CLASS 674.—Applicable to farm economy.—Portable and stationary engines, chaffers, hay and feed cutters, slicers, pulpers, corn mills, farm boilers and steamers, incubators, edged tools, mills, meat choppers.

CLASS 675.—Dairy fittings and appliances.—Churns for hand and power, butter-workers, cans and pails, cheese-presses, vats, and apparatus, ice-cream freezers, cedar-ware.

AGRICULTURAL ENGINEERING AND ADMINISTRATION.

CLASS 680.—Laying out and improving farms.—Clearing (stump extractors), construction of roads, draining, irrigating, models of fences, gates, drains, out-falls, dams, embankments, irrigating machinery, stack building and thatching.

CLASS 681.—Commercial fertilizers, phosphatic, ammoniacal, calcareous, etc.

CLASS 682.—Transportation.—Wagons, carts, sleds, harness, yokes, traction engines, and apparatus for road making and excavating.

CLASS 683.—Farm buildings.—Models and drawings of farm houses and tenements, barns, stables, hop-houses, fruit-driers, ice-houses, windmills, granaries, barracks, apiaries, cocooneries, aviaries, abattoirs, and dairies.

TILLAGE AND GENERAL MANAGEMENT.

CLASS 690.—Systems of planting and cultivation.

CLASS 691.—Systems of draining and application of manures.

CLASS 692.—Systems of breeding and stock feeding, training.

CLASS 693.—Veterinary surgery and appliances.

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Mills at Hartford & South Manchester

CONNECTICUT.

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SILK HANDKERCHIEFS AND MUFFLERS, Plain or with Woven or Printed Borders.

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Particular attention given to orders for special kinds of Silk used by manufacturers.

Specimens of all the above-mentioned fabrics and threads can be seen in the show-case of **Cheney Brothers**, in the American Silk Department of the Centennial Exhibition in the Main Building.

UNITED STATES.

Forest Products, Pomology, Agricultural Products.

Arboriculture and Forest Products.

- 1 Begg, Jonathan, Gilroy, Cal.—Collection of conifers of the Pacific Coast. E 25. 600
- 2 Pierce, Milton V., Wenonah, N. J.—Native wood. E 26. 600
- 3 Western North Carolina Land Co., Philadelphia, Pa.—Woods, medicinal herbs, iron ores, gold, manganese, mica, etc. E 19. 600
- 4 State of Indiana.—Timber, all kinds found in the State. G 20. 600
- 5 State Board of Iowa (collective exhibit), Fairfield, Iowa.—Woods, native and cultivated; wood seeds, soils. C 15. 600
- 6 National Timber Preserving Co., Philadelphia, Pa.—Method of treating timber with chemical preservatives. E 28. 600
- 7 Woods, Perry, & Co., Cleveland, Ohio.—White pine lumber. F 25. 600
- 8 State of Oregon, Portland, Oregon.—Native woods, medicine roots, and bark; shingles. E 22. 600
- 9 Eastern Burnettizing Co., Boston, Mass.—Burnettized lumber for bridges, wharves, railroads, and all positions where wood is liable to decay. F 26. 600
- 10 State of Delaware (collective exhibit), Dover, Del.—Timber in the rough and dressed. F 17. 600
- 11 Albemarle Swamp Land Co., North Carolina.—Cedar and cypress shingles, staves, etc. F 26. 600
- 12 Davis, Wise, & Co., North Carolina.—Ribbed cedar and cypress shingles. F 28. 600
- 13 State of West Virginia (collective exhibit).—Forest products. F 19. 600
- 14 Gore, E., Bath, Maine.—Basswood panels. F 28. 600
- 15 Burk, William B., & Co., Philadelphia, Pa.—Corks and sponges. E 25. 603
- 16 Smythe, Earle, & Co., New York, N. Y.—Crude elastic gums, with botanical specimens of same. F 26. 603
- 17 Butz, Alfred L., Philadelphia, Pa.—Machine and hand cut corks. E 25. 603
- 18 Michigan State Agricultural College (collective exhibit).—Forestry. H and I 20 and 21. 606

Pomology.

- 19 Atlantic Co. for the Culture of Cranberries, Weymouth, N. J.—Cranberries, natural and preserved. J 28. 610
- 20 State Board of Iowa, Fairfield, Iowa.—Apples and pears in wax models. C 15. 610
- 21 Collings, E. Z., Waterford, N. J.—Cranberries in jars, showing different varieties. C 20. 610

Agricultural Products.

- 22 State Board of Iowa, Fairfield, Iowa.—Corn, small grains, grass seeds, vegetable seeds, etc. C 15. 620
- 23 Branson, David H., Guthrieville, Pa.—Indian corn. N 10-11. 620
- 24 Henderson, John, Northport, L. I., N. Y.—Handbook of the grasses of America and Great Britain, with specimens. B 17. 620
- 25 State of Massachusetts (collective exhibit), Boston, Mass.—Agricultural products. E and F 23. 620
- 26 Possiponti, Angola, Harrisburg, Pa.—Straw for the manufacture of straw-goods. E 15. 620
- 27 Smith, E & J. P., Circleville, Ohio.—Broom-corn brush. F 15. 620
- 28 U. S. Hullers Oat Co., Williamsport, Pa.—Oats without hull, oat-flour, and feed. H 15. 620
- 29 State of Indiana, embracing 92 counties (collective exhibit). G 20.
 - a White, red, and amber wheat, oats, rye, barley, Indian corn, grass-seed, etc. 620
 - b Cloverseed, white and colored, butter-beans. 624
- 30 Landreth, D., & Sons, Philadelphia, Pa. H 15.
 - a Cereals, grasses, and tobacco. 620
 - b Field and garden seeds. 624
- 31 Michigan State Agricultural College. H & I 20 to 21.
 - a Farm products. 620
 - b Seeds of forest trees. 624
- 32 State of Oregon, Portland, Oregon. E 22.
 - a Native grasses, cultivated grasses, grain in the sheaf. 620
 - b Grain in the sack; cultivated grass-seed. 624

AGRICULTURE.

Agricultural Products.

- 33 State of Delaware, Dover, Del.** F 17.
 a Cereals. 620
 b Seeds. 624
- 34 Ohio State Centennial Board** (collective exhibit), Cleveland, Ohio. D and E 16.
 a Grains, grasses. 620
 b Seeds. 624
- 35 State of West Virginia** (collective exhibit). F 19.
 a Grasses and agricultural products. 620
 b Tobacco. 623
 c Wheat, corn, oats, barley, and rye. 624
- 36 Elias, B. K. & Sons, New York, N. Y.**—Potatoes. H 15. 622
- 37 Murdoch, Aug., New York, N. Y.**—American mustard. I 28. 623
- 38 Bourgeois, Edmund, New Orleans, La.**—Perique tobacco. G 25. 623
- 39 Weikel & Smith Spice Co., Philadelphia, Pa.**—Mustard, spices, celery-salt, blacking. H 28. 623
- 40 Kinney Francis S., New York, N. Y.**—Cigarettes and tobacco. G 25. 623
- 41 Frishmuth Bros. & Co., Philadelphia, Pa.**—Tobacco; fine-cut and smoking tobacco. I 24. 623
- 42 Swank, M. J. Philadelphia, Pa.**—Cigars. G 25. 623
- 43 Fell, C. J., & Bro., Philadelphia, Pa.**—Spices, mustards, crude and manufactured. J 21. 623
- 44 Stewart, Ralph, & Co., Philadelphia, Pa.**—Scotch snuff. G 26. 623
- 45 Holbrook, Edward, Louisville, Ky.**—Manufactured tobacco. H 25. 623
- 46 Israel, J. N., Philadelphia, Pa.**—Cigars. G 26. 623
- 47 Boyd, G., & Co., Philadelphia, Pa.**—Coffee, green and roasted. C 22. 623
- 48 Wardle George F., Philadelphia, Pa.**—Plug chewing tobacco. G 24. 623
- 49 Blackwell, W. J., & Co., Duchane, N. C.**—Plug, leaf, and smoking tobacco. H 23. 623
- 50 Batchelor Brothers, Philadelphia, Pa.**—Cigars, tobacco-plants. G 23. 623
- 51 Trowbridge, W. H., Danville, Va.**—Chewing and smoking tobacco. G 24. 623
- 52 Shelton Tobacco Curing Co., Asheville, N. C.**—Tobacco-hanger. G 24. 623
- 53 Wilkens, H., & Co., Baltimore, Md.**—Smoking tobacco and snuff. H 24. 623
- 54 Ellis, Wm., Philadelphia, Pa.**—Tobacco packing-box. I 26. 623
- 55 V. Martinez Ybor & Co., Key West, Fla.**—Cigars. 24. 623
- 56 Western North Carolina Land Co., Philadelphia, Pa.**—Cereals, fruits, cotton, and tobacco. E 19. 623
- 57 Marburg Bros., Baltimore, Md.**—Smoking and leaf tobacco. G 26. 623
- 58 Volinia Farmers' Club, Volinia, Mich.**—General farm products, cereals, etc. I 15. 623
- 59 Seidenberg & Co., New York, N. Y.**—Key West and Havana cigars. I 23. 623
- 60 Shuck, Samuel, Bedford, Pa.**—Anti-nervous cigars. I 26. 623
- 61 Watkins, W. M. & C., Milton, N. C.**—Plug and fine leaf tobacco. I 25. 623
- 62 Bailey, Samuel M., Richmond, Va.**—Plug tobacco. I 25. 623
- 63 Mayo, P. H., & Brother, Richmond, Va.**—Plug tobacco. H 25. 623
- 64 Holbrook, Harry C., Louisville, Ky.**—Plug tobacco. G 25. 623
- 65 Turpin & Brother, Richmond, Va.**—Plug tobacco. H 25. 623
- 66 Suehnel, Emil J., Philadelphia, Pa.**—Cigars. G 24. 623
- 67 Cohen, John B., Philadelphia, Pa.**—Cigars. G 24. 623
- 68 Gulden, Charles, New York, N. Y.**—German, French, and American mustards. I 28. 623
- 69 Lorillard, P. & Co., New York, N. Y.**—Plug and fine-cut chewing tobacco, smoking tobacco and snuffs. I and H 25. 623
- 70 Lovell & Buffington, Covington, Ky.**—Fine-cut chewing tobacco. G 25. 623
- 71 Kimball, Wm. S., & Co., Rochester, N. Y.**—Chewing and smoking tobacco. G 25. 623
- 72 Peignier, P. W. & Son, Baltimore, Md.**—Smoking tobacco. H 26. 623
- 73 Gail & Ax, Baltimore, Md.**—Smoking, fine-cut chewing tobacco, and snuffs. I 26. 623
- 74 Kerbs & Spiess, New York, N. Y.**—Cigars. G 26. 623
- 75 Armistead, Louis L., Lynchburg, Va.**—Granulated smoking tobacco. I 24. 623
- 76 Mellen, L. F., West Springfield, Mass.**—Connecticut-seed leaf tobacco. J 26. 623
- 77 Brito, Joseph Z., & Co., New York, N. Y.**—Cigarettes. H 25. 623
- 78 Alces, George, New York, N. Y.**—Cigars. H 24. 623
- 79 Sullivan & Burk, Detroit, Mich.**—Cigars of home manufacture. H 26. 623
- 80 Gumpert Bros., Philadelphia, Pa.**—Cigars. I 26. 623
- 81 Colburn, A., & Co., Philadelphia, Pa.**—Mustard, spices, and washing-blue. G 28. 623
- 82 Bonnett, Schuck, & Earle, New York, N. Y.**—Spices and mustard. G 28. 623
- 83 Allen, J. F., & Co., Richmond, Va.**—Granulated plug and cut smoking tobacco, plug tobacco, cigarettes. I 25. 623
- 84 Dean, William G. New York, N. Y.**—Mustard. I 28. 623
- 85 Agnew, Eisenbeis, & Co., Allegheny, Pa.**—Table, pickling, and aromatic vinegars. H 28. 623
- 86 Cascie, Robert A., Rocheport, Mo.**—Tobacco. H 26. 623
- 87 Boden, H. W., & Co., Milwaukee, Wis.**—Vinegar. H 28. 623
- 88 Tobacco-Growers of Penn's Manor, Morrisville, Pa.**—Unsweetened tobacco. I 24. 623
- 89 Buist, Robert, Jr., Philadelphia, Pa.**—Seeds. G 15. 624
- 90 Fulton, Joseph W., Libertyville, Iowa.**—Corn, grains, grass, and fieldseeds, vegetable seeds, etc. G 15. 624
- 91 Meehan, Thomas, Philadelphia, Pa.**—Seeds of native hardy trees and shrubs. G 16. 624

Agricultural Products, Land and Water Animals, Animal Products.

- 92 Thurlow, H., Skaneateles, N. Y.—Teasels. H 15. 624
 93 Rogers, C. B., Philadelphia, Pa.—Field and garden seeds. I 16. 624
 94 Red Wing Mills, Red Wing, Minn.—Fife-wheat. I 26. 624
 95 McLaughlin, J. M., & Son, Skaneateles, N. Y.—Teasels. H 15. 624
 96 Thornburn, J. M., & Co., New York, N. Y.—Garden, flower, field, and tree seeds. I 26. 624
 97 Henderson, Peter, & Co., New York, N. Y.—Field and garden seeds. I 16. 624
 98 Illinois State Board of Agriculture (collective exhibit), Springfield, Ill.—Samples illustrating the agricultural, horticultural, geological, and other resources of the State. G 22. 600-624

Land Animals.

- 99 Michigan State Agricultural College, Lansing, Mich.
 a Birds, useful and injurious. H and I 20 to 21. 635
 b Insects, useful and injurious. 638
 100 Beath, J. R., Philadelphia, Pa.—Stuffed birds. K 23. 635
 101 Aldrich, P. W., Readville, Mass.—Stuffed birds. K 23. 635
 102 Howlett, C. K., Hudson, Ohio.—Stuffed birds of America. K 23. 635
 103 Brown, Clark, D. W., Aurora, Ill.—Stuffed birds. K 24. 635
 104 Crenshaw, George, Philadelphia, Pa.—Stuffed Hamburg fowls, with their young. K 24. 635
 105 Academy of Natural Sciences, Allentown, Pa.
 a Birds with their nests and eggs. 635
 b Quadrupeds. K 23. 637
 106 Rosenbaum, F., Watertown, Wis.—Wisconsin birds. K 23. 635
 b Animals of Wisconsin. 637
 107 Forster, Christian, Hamilton, Ohio.—Mounted birds of North America. K 24. 635
 b Mounted animals of North America. 637
 108 Wallace, John, New York, N. Y.—Stuffed animals. K 24. 635
 [Special displays of Live-Stock are arranged to be held during September, October, and November.]

Water Animals, Fish Culture, and Apparatus.

- 109 Ward, Henry A., Rochester, N. Y.—Casts of fossils, zoological specimens, mammals, birds, reptiles, fishes, batrachians, etc., stuffed and mounted. K 26 to 27. 640
 109 a Crenshaw, George, Philadelphia, Pa.—Stuffed fish. K 24. 641
 110 American Sardine Co., New York, N. Y.—Boneless sardines. A 19. 642
 111 Hapgood & Co., San Francisco, Cal.—Preserved salmon. A 19. 642
 112 Goodale, S. L., Saco, Maine.—Food extract from the juices of fish. J 23. 426
 113 Rogers, John S., Gloucester, Mass.—Gelatine, isinglass, and glue made from salt-fish skins. A 22. 646

- 114 Norwood, C., & Son, Ipswich, Mass.—Isinglass. A 22. 646
 115 Müller, Gustave, Chicago, Ill.—Russian isinglass. A 22. 646
 116 Gulden, Charles, New York, N. Y.—Salad oils. I 28. 646
 117 Fox, George, Jr., Philadelphia, Pa.—Split and glued bamboo trout fly rods. A 27. 647
 118 Shipley, A. B., & Son, Philadelphia, Pa.—Fishing tackle. A 15. 647
 119 Ferrell, J. A., Bloomfield, Ky.—Angler's transparent float. A 26. 647
 120 Mansfield, G. H., & Co., Canton, Mass.—Braided fishing lines. A 26. 647
 121 Conroy, Bassett, & Malleson, New York, N. Y.—Fishing rods, reels, lines, flies, and fishing tackle. A 28. 647
 122 City of Gloucester, Essex Co., Mass.—Exhibit of her progress, development, and industries as the largest fishing port in the United States. A and B 20 and 21. 647
 123 Douglass, W. & B., Middletown, Conn.—Aquariums. C 18. 648
 124 Murphy & Broom, Philadelphia, Pa.—Aquarium tanks. C 25. 648
 125 Clarke, N. W., Northville, Mich.—Fish-hatching apparatus. A 24. 648
 126 Taxis, E. W., Philadelphia, Pa.—Aquarium tank. A 21. 648

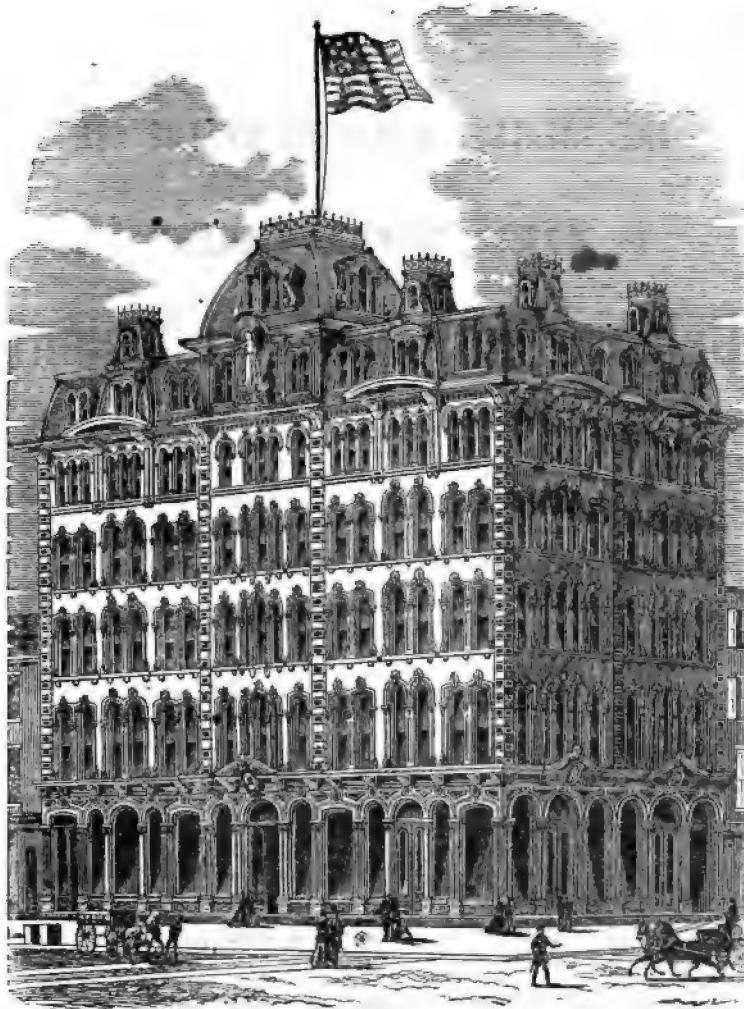
Animal and Vegetable Products.

- 127 Crawford & Watson, Philadelphia, Pa.—Bleached sponge. F 26. 650
 128 American Condensed Milk Co., New York, N. Y.—Condensed milk. J 21. 651
 129 Napheys, George C., & Son, Philadelphia, Pa.—Refined leaf lard. K 20. 652
 130 Chalmers, James, & Sons, Williamsburg, N. Y.—Gelatine. K 22. 652
 131 Wilcox, W. J., & Co., New York.—Refined leaf-lard. K 21. 652
 132 Stein, Hirsh, & Co., Chicago, Ill.—Egg albumen, blood albumen, casein and dried blood. J 22. 652
 133 Brown, William H., Peabody, Mass.—Prepared sizing, glue. K 20. 652
 134 Franklin Glue Works, Pittsburgh, Pa.—Glue, neats-foot oil. K 20. 652
 135 Upton, George, Boston, Mass.—Glue in sheets, broken, ground, and powdered. K 20. 652
 136 Peter Cooper's Glue Factory, New York, N. Y.—Glue, gelatine, neats-foot oil. K 22. 652
 137 Lister Brothers, Newark, N. J.—Glue, tallow, etc. C 25. 652
 138 Woods & Carnahan, Cincinnati, Ohio.—Adamantine candles. J 22. 652
 139 Meriam Packing Co., Boston, Mass. I 20.
 a Hides, tallow, etc. 652
 b Mess beef, concentrated roast beef, and canned turtle. 656
 140 State of Oregon (collective exhibit), Portland, Oregon. E 22.
 a Glue, condensed cider. 658
 b Dried fruit. 656
 c Farina, flour, and oatmeal. 651

AGRICULTURE.

Animal and Vegetable Products.

- 141** Mellen & Co., New York, N. Y.—Renovated live-geese feathers. H 17. 653
- 142** Harbison, W. C. New Castle, Pa.—White Mountain honey. J 23. 654
- 143** Fritsch, Joseph. Carlstadt, N. J.—Unbleached wax. J 23. 654
- 144** Lewis, W. K., & Brothers, Boston, Mass.—Preserves, pickles, catsups, condensed milk, canned fruits, meats, and vegetables. J 22. 656
- 145** Portland Packing Co., Portland, Maine.—Canned vegetables, fruits, meats, poultry, and shell-fish. J 23. 656
- 146** Sleeper, Wells, & Aldrich, Burlington, N. J.—Canned vegetables. J 24. 656
- 147** Atmore & Son, Philadelphia, Pa.—Mincemeat and English plum-pudding. J 24. 656
- 148** Slocum, W. H., & Bro., Philadelphia, Pa.—Mincemeat, canned goods. J 23. 656
- 149** Brakeley, Asher, Bordentown, N. J.—Canned tomatoes. J 24. 656
- 150** Anderson & Campbell, Camden, N. J.—Canned fruits, vegetables fruit-butter, and mincemeat. J 24. 656
- 151** Boyd, G., & Co., Philadelphia, Pa.—Dried grain and fruit. C 22. 656
- 152** Heintz, Noble, & Co., Pittsburgh, Pa.—Pickles, vinegar, sauces, catsups, etc. J 22. 656
- 153** Reeves, Parvin, & Co., Philadelphia, Pa.—Canned vegetables. J 23. 656
- 154** Wright, Joshua, & Son, Philadelphia, Pa.—Minced meat. J 24. 656
- 155** Wilson Packing Co., Chicago, Ill.—Hermetically sealed cooked meats; corned beef, ham, tongue, and fresh beef. J 23. 656
- 156** Norris, J. W., & Co., New York, N. Y.—Hams, shoulders, and bacon. J 20. 656
- 157** Githens & Rexsamer, Philadelphia, Pa.—Canned fruits and vegetables. J 23. 656
- 158** Du Vivier & Co., New York, N. Y.—Pickles and delicacies. J 20. 656
- 159** Haller, Ella G., New York, N. Y.—Choice fruits. J 21. 656
- 160** Gordon & Dilworth, New York, N. Y.—Preserved domestic and foreign fruits, jellies, canned goods, sauces, syrups, and general table delicacies. J 23. 656
- 161** Dover Canning Co., Dover, Del.—Canned goods, fresh and preserved fruits, vegetables, meats, etc. I 24. 656
- 162** Snedecker, David, New York, N. Y.—Preserved fruit, vegetables, meat, etc. I 24. 656
- 163** McMurray, L., & Co., Baltimore, Md.—Canned vegetables, fruits, and oysters. J 24. 656
- 164** Richardson & Robbins, Dover, Del.—Canned and preserved fruits, potted meats, etc. J 24. 656
- 165** Fruit-Growers' Trade Co. of New Jersey, New York, N. Y.—Cranberries, natural and preserved, canned tomatoes, etc. D 24. 656
- 166** Clarkson, F. M., & Son, Bridgeville, Del.—Evaporated and conserved fruits and vegetables. J 22. 656
- 167** Borden, John G., Brewsters, N. Y.—Condensed milk, coffee, and cocoa, extract of beef, etc. I 22. 656
- 168** American Desiccating Co., Philadelphia, Pa.—Crystallized coconut. J 24. 656
- 169** Chicago Pork-Packers' Association, Chicago, Ill.—Beef, pork, lard, ham, shoulders, sides, bacon, canned meat, tallow, etc. J 17, 18, 19. 656
- 170** Gulden, Charles, New York, N. Y.—Tomato catsup, capers, and olives. 28. 656
- 171** New York Desiccating Co., New York, N. Y.—Prepared coconut for pies, cakes, etc. I 24. 656
- 172** Libby, McNeal, & Libby, Philadelphia, Pa.—Canned cooked meats. J 24. 656
- 173** Reckhow Preserving Co., Paterson, N. J.—Pickles and table sauces. J 24. 656
- 174** New York Hop Extract Co., New York, N. Y.—Hop extract. K 17. 656
- 175** Little Creek Canning Co., Little Creek, Del.—Canned fruits and vegetables. J 23. 656
- 176** Jones, John Winslow, Portland, Maine.—Canned green corn, lobster, mackerel, salmon, and beef. I 23. 656
- 177** Cassard, Geo., Baltimore, Md.—Pepper hams. K 21. 656
- 178** Zane, Norny, & Co., Philadelphia, Pa.—Fruit-preserving powder. J 23. 656
- 179** Annear, John, & Co., Philadelphia, Pa.—Pennsylvania sauce. J 24. 656
- 180** Le Croid, James, East Medway, Mass.—Canned vegetables, apples, etc. J 23. 656
- 181** Brooks, E. D., Boston, Mass.—Pickles, preserves, canned goods, etc. J 21. 656
- 182** MacGowan, John K., Philadelphia, Pa.—Table sauce. J 21. 656
- 183** Underwood, W. & Co., Boston, Mass.—Canned meats, fish, fruits, vegetables, etc.; pickles, catsups, sauces, etc. J 24. 656
- 184** Cowdrey, E. T., & Co., Boston, Mass.—Canned vegetables, meats, and fruits, pickles, preserves, and jellies. I 21. 656
- 185** Burnham & Morrill, Portland, Maine.—Canned meats, soups, fish, and vegetables. J 23. 656
- 186** Harris, Milo, Jamestown, N. Y.—Dried fruits D 23. 656
- 187** Dingee, Squire, Chicago, Ill.—Pickles, chow-chow, and sauces. J 23. 656
- 188** Holgate, Geo., & Co., Oshkosh, Wis.—Preserved fruits and vegetables; preserved meats in joint. J 23. 656
- 189** Williams, John, South Haven, Mich.—Evaporated fruits and vegetables. D 24. 656
- 190** George, P. T., & Co., Baltimore, Md.—Hams, lard, and lard oil. K 21. 656
- 191** Jacob, Chas., Jr., & Co., Cincinnati, Ohio.—Hams, shoulders, breakfast bacon, mess pork, mess and dried beef, beef tongues, etc. J 15-16. 656
- 192** Keck, J. L., & Bros., Cincinnati, Ohio.—Pickled meats, lard, etc. J 15-16. 656



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SCHENCK'S PULMONIC SYRUP,
A POSITIVE CURE FOR CONSUMPTION.

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Warranted to cure Colic, Diarrhoea, Spasms, and Vomiting, taken internally, and Croup, Chronic Rheumatism, Cuts, Bruises, Insect Stings, Sore Throats, Toothache, Old Sores, and Pains in the Back, Chest, and Limbs, externally.

IT HAS NEVER FAILED, NOR HAS ONE BOTTLE BEEN RETURNED,

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10 PARK PLACE, NEW YORK.

 Sold by all Druggists. Price, 50 Cents and One Dollar.

UNITED STATES.

19

Animal and Vegetable Products.

- | | |
|---|-----|
| 193 Kahn & Forbes, Cincinnati, Ohio.
—Mess pork, bacon, lard, sugar-cured hams, boxed meats, etc. J 15-16. | 656 |
| 194 Evans, Lippincott, & Cunningham, Cincinnati, Ohio. —Bacon, hams, mess pork, lard, and breakfast bacon. J 15-16. | 656 |
| 195 Davis, S., Jr., & Co., Cincinnati, Ohio. —Smoked hams and breakfast bacon. J 15-16. | 656 |
| 196 Morrison, James, & Co., Cincinnati, Ohio. —Hams, bacon, mess pork, lard, English meats, etc. J 15-16. | 656 |
| 197 Fell, C. J., & Bro., Philadelphia, Pa. J 21.
a Gelatine. 656
b Self-raising flour. 657 | |
| 198 Dunbar, G. W., & Sons, New Orleans, La. J 24.
a Shell-fish, vegetables, and fruits. 656
b Cordials and syrups. 660 | |
| 199 Lagomarsino & Cuneo, Philadelphia, Pa. —Macaroni, vermicelli, fancy paste, farina, etc. J 26. | 657 |
| 200 Outcalt, John, Spotswood, N. J. —Hominy, samp, corn, and wheat flour. J 26. | 657 |
| 201 Tyrell, I. F., & Co., New York, N. Y. —Oatmeal. J 27. | 657 |
| 202 Schumacher, Ferd., Akron, Ohio. —Oatmeal, barley, farina, cracked wheat, flour, hominy, meal, feed, and grain. J 26. | 657 |
| 203 Hecker, George V., & Co., New York, N. Y. —Self-raising flour, buckwheat, griddle-cake flour, farina, and cracked wheat. J 25. | 657 |
| 204 Red Wing Mills, Red Wing, Minn. —Flour. I 26. | 657 |
| 205 Baltimore Pearl Hominy Co., Baltimore, Md. —Breakfast hominy, meal, flour, samp, etc. J 28. | |
| 206 Jewell Brothers, Brooklyn, N. Y. —Plain and self-raising flour, babies' cereal food. J 28. | 657 |
| 207 Miller, Charles L., Colon, Mich. —Pumpkin flour. J 28. | 657 |
| 208 Stuart & Douglas, Cedar Rapids, Iowa. —Oatmeal. J 22. | 657 |
| 209 Duryea's Glen Cove Starch Co., Glen Cove, N. Y. —Laundry starch, corn starch, and maizena. J 15-16. | 658 |
| 210 Kingsford, T., & Son, Oswego, N. Y. —Laundry starch, corn starch, etc. J 13-14. | 658 |
| 211 Wood, Julius J., & Co., Columbus, Ohio. —Laundry starch, corn starch for food. J 21. | 658 |
| 212 Erkenbreher, Andrew, Cincinnati, Ohio. —Starch, cornena, sateena, etc. J 17, 18, 19. | 658 |
| 213 Johnson, R., & Son, Madison, Ind. —Starch. J 22. | 658 |
| 214 Miller, H. J., & Co., West Liberty, Ohio. —Maple sugar and molasses. J 25. | 659 |
| 215 Post, C. C., Burlington, Vt. —Maple sugar and syrup. C 24. | 659 |
| 216 Murdock, Albert L., Boston, Mass. H 17.
a Beet sugar. 659
b Peat. 660 | |
| 217 Nennich, Henry, Philadelphia, Pa. —Vinegar. G 28. | 660 |
| 218 Chalwin, H. A., New York, N. Y. —Cordials, syrups, and extracts. K 11. | 660 |
| 219 Hinckle, Julius, Egg Harbor City, N. J. —Domestic wines. K 12. | 660 |
| 220 Urbana Wine Co., Hammondsport, N. Y. —Champagne, still wines, and brandy from native grapes. K 12. | 660 |
| 221 Johnson, T. H., Bricksburg, N. J. —Domestic wines. J 23. | |
| 222 Mills, William H., Sandusky, Ohio. —Still and sparkling domestic wines. K 14. | 660 |
| 223 American Champagne Co., New York, N. Y. —Still and sparkling wines. K 13. | 660 |
| 224 Smith's, J. H., Sons, New York, N. Y. —California wines and brandies. K 11. | 660 |
| 225 United Wine-Growers, Egg Harbor, N. J. —Native grape wines. K 8. | 660 |
| 226 American Wine Co., St. Louis, Mo. —Sparkling and still wines. K 14. | 660 |
| 227 Dreyfus, B., & Co., San Francisco, Cal. —California wines and brandies. K 14. | 660 |
| 228 Poeschel, M., & Scherer, Hermann, Mo. —Native wines. K 13. | 660 |
| 229 Kohler & Frohling, San Francisco, Cal. —California wines and brandies. K 10-11. | 660 |
| 230 Keller, J. S., Orwigsburg, Pa. —Wine and whisky. K 13. | 660 |
| 231 Werk, C. Wehr, & Son, Middle Bass Island, Ohio. —Native wines. K 8. | 660 |
| 232 Buena Vista Vinicultural Society, San Francisco, Cal. —Wines and brandy. K 11. | 660 |
| 233 Keller, M., Los Angeles, Cal. —Wines and brandies. K 7. | 660 |
| 234 Pleasant Valley Wine Co., Hammondsport, N. Y. —Champagne, still wines, and brandies. K 14. | 660 |
| 235 Middleton, G. W., & Co., Philadelphia, Pa. —Alcohol, rectified, French, and Cognac spirits. K 16. | 660 |
| 236 Landsberger, I., & Co., San Francisco, Cal. —Champagnes and brandies. K 7. | 660 |
| 237 Bellu, Jacob, Detroit, Mich. —Native grape wines, currant and elderberry wines. K 7. | 660 |
| 238 Hathaway, Vincent, & Co., Boston, Mass. —Boston ginger ale. K 17. | 660 |
| 239 Hannis Distillery Co., Philadelphia, Pa. —Whisky. K 15. | 660 |
| 240 Wideman, Hard, & Co., Cleveland, Ohio. —Domestic wines and brandy. K 16. | 660 |
| 241 Pierce, S. S., & Co., Boston, Mass. —Champagne cider. J 23. | 660 |
| 242 Mears, Freed, & Co., New York City, N. Y. —Ale. K 17. | 660 |
| 243 Smith, A. M., Philadelphia, Pa. —Still and sparkling wines from Orleans Hills vineyards, Sacramento, Cal. K 7. | 660 |
| 244 Landauer Bros., Philadelphia, Pa. —Rye whisky. K 16. | 660 |

AGRICULTURE.

Vegetable Products, Textile Substances, Implements.

- 245 Levy, James, & Bro., Cincinnati, Ohio.**—Bourbon and rye whiskies. K 16. 660
- 246 Bannihe, John H., Egg Harbor City, N. J.**—Native grape wines. K 14. 660
- 247 Goetze, F. A., Jersey City, N. J.**—Native wines. K 13. 660
- 248 Huck, John A., Chicago, Ill.**—Wines. K 12. 660
- 249 Mahé, Gustave, San Francisco, Cal.**—Golden wine. K 14. 660
- 250 Steuben County Vineyard Association, Bath, N. Y.**—Native grape wines and brandy. K 9. 660
- 251 Cirqui, Joseph, Newark, N. J.**—Wine. K 9. 660
- 252 Kelley's Island Wine Co., Kelley's Island, Ohio.**—Champagnes and claret wines, etc.; Catawba brandy. K 11. 660
- 253 Perkins, Stern, & Co., New York, N. Y.**—California wines and brandies. K 8. 660
- 254 Whitman, Stephen F., & Son, Philadelphia, Pa.**—Variety of manufactures in confectionery and chocolate. K 25. 661
- 255 Baker, Walter, & Co., Boston, Mass.**—Chocolate and cocoa preparations. K 25. 661
- 256 Rumford Chemical Works, Providence, R. I.**—Yeast powder, cream tartar, acid phosphate, and bread preparation. K 21. 661
- 257 Wilson, Walter, G., & Co., Philadelphia, Pa.**—Crackers and biscuit. K 23. 661
- 258 Larrabee, E. J., & Co., Albany, N. Y.**—Biscuit, crackers, etc. K 22. 661
- 259 Croft, Wilbur, & Co., Philadelphia, Pa.**—Confectionery, lozenges, glace fruit, etc. K 26. 661
- 260 Morse, G. Byron, Philadelphia, Pa.**—Plain and fancy cakes, milk and cream biscuits, rolls, buns, pastry, etc. K 26. 661
- 261 Chase & Co., Boston, Mass.**—Confectionery. K 28. 661
- 262 Hartman, John, Philadelphia, Pa.**—Crackers, cakes, and biscuits. K 24. 661
- 263 Weaver, J. R., Philadelphia, Pa.**—Confectionery. K 27. 661
- 264 Schare & Co., New York, N. Y.**—Ornamental confectionery. K 25. 661
- 265 Mockridge, E., & Co., Philadelphia, Pa.**—Azumea, bread, cakes, pastry, etc. K 21. 661
- 266 Greenfried & Strauss, New York, N. Y.**—Confectionery, medicated and other lozenges, etc. K 26. 661
- 267 Dexter, E. M., & Co., Philadelphia, Pa.**—Ornamental confectionery. K 27. 661
- 268 Laurent, F., Philadelphia, Pa.**—Confectionery and decorative ornaments for cakes. K 27. 661
- 269 Henry Maillard, New York, N. Y.**—Bonbons, chocolate, ornamental confectionery. K 25. 661
- 270 Thorn & Brother, Trenton, N. J.**—Crackers, butter, oyster, wine, and scroll biscuit. K 24. 661
- 271 Geifuss, H. H., Philadelphia, Pa.**—Ornamental confectionery. K 28. 661
- 272 Heide & Wirtz, New York, N. Y.**—Almond paste. K 23. 661
- 273 Brunnen, Christ-zum, Philadelphia, Pa.**—Fine confectionery, lozenges. K 28. 661
- 274 Exton, Adam, & Co., Trenton, N. J.**—Butter, oyster, and wine crackers. K 23. 661
- 275 Runkel, H., & Co., Clifton, N. Y.**—Chocolate goods and cocoa for confectioners. K 28. 661
- 276 Florentine Candy Company, Chicago, Ill.**—Flake candy. K 27. 661
- 277 National Yeast Company, Seneca Falls, N. Y.**—Dry-hop yeast cake. K 17. 661
- 278 Smith's Homeopathic Pharmacy, New York, N. Y.**—Alkethrepta, soluble chocolate, and chocolate confections. K 27. 661
- 279 Thurston, Hall, & Co., Cambridgeport, Mass.**—Boston crackers. K 21. 661
- 280 Central Oil Mills, Selma, Ala.**—Crude cotton-seed oil, refined oil, and cotton-seed oil-cake. C 25. 662
- Textile Substances of Vegetable or Animal Origin.**
- 281 Murdork, Albert L., Boston, Mass.**—Cotton from all countries. E 25. 665
- 282 Claghorn, Herring, & Co., Philadelphia, Pa.**—The cottons of the world. G 18 and 19. 665
- 283 State of West Virginia (collective exhibit).**—Hemp and flax. F 19. 666
- 284 George Stratford, Jersey City, N. J.**—Oakum. H 17. 666
- 285 Boston Excelsior Co., Boston, Mass.**—Excelsior for upholstering purposes. I 17. 666
- 286 Wannemacher, Samuel, North Jackson, Ohio.**—Spinning tow, made from native flax straw. E 24. 666
- 287 American Linen-Thread Co., Mechanicville, N. Y.**—Flax, gilling, and machine threads, warp, filling, and twines. E 24. 666
- 288 State of Oregon, Portland, Oregon.**—Wool and woolen fabrics. E 22. 667
- 289 Bond, George W., Boston, Mass.**—Commercial wools. I 19. 667
- 290 Northern Ohio Woollen Mills, Cleveland, Ohio.**—All-wool shoddisies. I 18. 667
- 291 Wilkens, Theodore, New York, N. Y.**—Hair moss for upholstering. E 26. 669
- 292 Mellen & Co., New York, N. Y.**—Curled horse-hair tickings. I 26. 669
- 293 Herzog, J., & Co., San Francisco, Cal.**—Eureka hair, substitute for curled hair. H 17. 669
- 294 Franklin Glue Works, Pittsburgh, Pa.**—Curled hair. K 20. 669
- 295 Wilkens, William, & Co., Baltimore, Md.**—Bristles, horse-hair, fibre, curled hair, etc. H 17. 669
- Machines, Implements, and Processes of Manufacture.**
- 296 Collins & Co., Hartford, Conn.**—Axes, hatchets, adzes, machetes, railway and mining tools, plows, etc. N 24. 670

Machines, Implements, and Processes of Manufacture.

- 297 Myers & Ervien, Philadelphia, Pa.**—Hay-forks, etc., potato-drags. S 25. 670
- 298 Sweepstakes Plow Co., San Francisco, Cal.**—Gang-plows, tiller-plows, etc. N 25. 670
- 299 Harper, Smith, Philadelphia, Pa.**—Steel hoes, rakes, etc. T 26. 670
- 300 Bean, H., & B. F., Pawling, Pa.**—Corn-marker, cultivator, grain and seed sower. N 19. 670
- 301 Bateman, E. S., & F., Spring Mills, N. J.**—Field and garden cultivators. N 23. 670
- 302 Peppler, Thomas, Hightstown, N. J.**—Plow and cultivator. M 24. 670
- 303 Kissell, Blount, & Co., Springfield, Ohio.**—Corn cultivator. N 24. 670
- 304 Bucher, Gibbs, & Co., Canton, Ohio.**—Plows on revolving tables representing "1776 and 1876." L 24. 670
- 305 Decker, P. H., Chicago, Ill.**—Hollow tooth harrow, and roller mold-board plow. P 26. 670
- 306 Parrott, Charles, Dayton, Ohio.**—Plows. L 25. 670
- 307 O'Brien, J., Kewanee, Ill.**—Sectional vibrating harrows. L 26. 670
- 308 Park, H., & H., Mt. Victory, Ohio.**—Fork, hoe, and broom handles. T 25. 670
- 309 Beers, Edwin A., De Kalb, Ill.**—Sulky and gang plows. L 27. 670
- 310 Deere & Co., Moline, Ill.**—Steel plows, gang and sulky plows, walking corn-cultivators. Q 24. 670
- 311 Morrison Brothers, Fort Madison, Iowa.**—Self-cleaning iron and wood beam plow. L 24. 670
- 312 Sheble & Fisher, Philadelphia, Pa.**—Hay and manure forks, rakes, potato-hooks, and manure-drags. S 25. 670
- 313 Wallace, Samuel J., Keokuk, Iowa.**—Straddle-row cultivator. L 26. 670
- 314 Miller & Wallace, Keokuk, Iowa.**—Texas plow. L 26. 670
- 315 Isaacs, Fred. H., Newark, N. J.**—Sulky gang-plow. M 25. 670
- 316 Cotton, A. C., Vineland, N. J.**—Reversible scuffle-hoe. D 17. 670
- 317 Heydrick, W. H. H., Philadelphia, Pa.**—Steam plow, and farm engine. L 23. 670
- 318 Myer, B., Newark, N. J.**—Plows. N 25. 670
- 319 Coupal & Dalpaz, St. Anne, Ill.**—Dirt-scaper. C 17. 670
- 320 Brewster, Dodge, & Huse, Peru, Ill.**—Wheel corn-cultivator, steel plows for old ground and for breaking prairie-sod. Q 26. 670
- 321 Greenwich Machine Works, Greenwich, N. Y.**—Cultivator and shovel plow. M 26. 670
- 322 Richmond Plow Works, Richmond, Ind.**—Steel plows. L 25. 670
- 323 Moline Plow Co., Moline, Ill.**—Wood-beam plows, steel-beam plows, and cultivators. Q 26 and 28. 670
- 324 Laurence and Chapin, Kalamazoo, Mich.**—Plows. M 24. 670
- 325 Muschert, B. F., Morrisville, Pa.**—Cultivator plow. M 25. 670
- 326 Rogers, C. B., Philadelphia, Pa.**—Cultivators, berry and fruit baskets. M 26. 670
- 327 Benson, B. S., Baltimore, Md.**—Steam plow. N 9. 670
- 328 Speer, Alexander, & Sons, Pittsburgh, Pa.**—Iron and steel plows. M and L 28. 670
- 329 South Bend Iron Works, South Bend, Ind.**—Chilled plows and attachments, specimens of chilled metal. P 26. 670
- 330 Hull, David H., Syracuse, N. Y.**—Machine for stripping and booking tobacco. M 22. 670
- 331 Brous, T. Miles, Philadelphia, Pa.**—Plows. M 24. 670
- 332 Buford, H. D., & Co., Rock Island, Ill.**—Plows and cultivators. O 28. 670
- 333 Wiard & Hough, East Avon, N. Y.**—Wood and iron beam plows. O 26. 670
- 334 Estes, William A., Boston, Mass.**—Anti-friction plow. N 26. 670
- 335 Halsey, H., Monroe, Thomaston, Me.**—Rotary harrow. L 28. 670
- 336 Travis, A. B., Brandon, Mich.** L 22.
a Horse wheat-hoe. 670
b Seed drill. 671
- 337 Root, D., Son & Co., Mount Joy, Pa.**—Steel and iron plows, cultivators, and agricultural steels. L 28. 670
- 338 Reynolds, E. D., & O. B., Brockton, Mass.** N 25.
a Gang plows and attachments, cultivators, harrows, and horse hoes. 670
b Seed drills, planters, etc. 671
- 339 Pitcher, L. D., Dixon, Ill.**—Loose-grain fork. T 25. 670
- 340 Chicago Plow Co., Chicago, Ill.**—Plows and cultivators. P 28. 670
- 341 Wagener, Jeptha A., Holtsville, N. Y.** P 22.
a Plow with new attachments. 570
b Corn-stalk cutter and grinder. 674
- 342 Avery, B. F., & Sons, Louisville, Ky.**—Plows, cultivators, etc. N 28. 670
- 343 Walker, James R., Detroit, Mich.**—Iron plow. K 28. 670
- 344 Harnish, Edward P., Felton, Del.** L 22.
a Cultivator. 670
b Corn-planter. 671
- 345 Gregg & Co., Trumansburg, N. Y.** R 20.
a Sulky-plow. 670
b Mowing-machine. 672
- 346 Hutchinson, Samuel, Griggsville, Ill.**—Adjustable harrow. P 28. 670
- 347 Opp, Henry, Belleville, Ill.**—Gang and sulky plow. M 24. 670
- 348 Gifford, Johnson, & Co., Hudson, N. Y.**—Pulverizing-cultivators, corn-cultivators, and hillings-plows. O 26. 670
- 349 Keller, Charles F., Harbor Creek, Pa.** M 24.
a Combined cultivator and planter. 670
b Double-row self-regulating planter. 671
- 350 Ames, Oliver, & Sons, North Easton, Mass.**—Shovels, spades, scoops, and drainage tools. S 26. 670
- 351 Griffiths, George, Philadelphia, Pa.**—Shovels, spades, handles, coal-hods, and pans. T 27. 670

AGRICULTURE.

Machines, Implements, and Processes of Manufacture.

- 352 Frank, Charles, Freeburg, Ill.**—Combined plow and cultivator, plows, cultivators, etc. M 26. 670
- 353 Rowland, T., & Sons, Philadelphia, Pa.**—Shovels and spades. T 17, A 17. 670
- 354 Walton, Silas, Moorestown, N. J.**—Garden and field cultivator. L 25. 670
- 355 Rue, J. Chalmers, Englishtown, N. J.**—Gang-plow. L 25. 670
- 356 Smith, Peter E., Scotland Neck, N. C.** M 24.
- a* Sulky-plow. 670
 - b* Cotton-seed planter. 671
- 357 Baylies, Edwin, Massillon, Ohio.** O 17-18.
- a* Wheel-harrow, iron cultivator, and shovel-plow. 670
 - b* Harvester. 672
- 358 Ward's Fertilizer Co., Boston, Mass.** M 26.
- a* Hiarrows. 670
 - b* Potato-planter and digger. 671
- 359 Brown, Hinman & Co., Columbus, Ohio.** T 25.
- a* Wedding-hoes, garden-rakes, manure and spading forks. 670
 - b* Scythe-smiths, grain-cradles, hay-forks, etc. 672
- 360 Mabbett, Truman, Vineland, N. J.** O 26.
- a* Hand and horse cultivators. 670
 - b* Berry-crates. 674
- 361 Withington, Cooley, & Co., Jackson, Mich.** T 25.
- a* Cast-steel hoes, rakes, and potato-hooks. 670
 - b* Hay and manure forks, scythe-smiths, etc. 672
- 362 Morrison & Fay, Bryan, Ohio.** M 25.
- a* Plow. 670
 - b* Corn-sheller. 674
- 363 Grove, M. M., & Co., Harrisburg, Pa.** M 22.
- a* Carriage axle. 670
 - b* Harvester crank pin and journal. 674
- 364 Brownback, P. N., Limerick Station, Pa.** N 16.
- a* Threshing-machine, dust-conveyer, and plows. 670
 - b* Self-acting hay-rake, mower, and reaper. 672
 - c* Sausage-cutter, stuffer, etc. 674
- 365 Thomas, Ludlow, & Rodgers, Springfield, Ohio.** N 18.
- a* Broad-cast seed-sower and cultivator. 670
 - b* Grain-drill and seed-sower. 671
 - c* Wine and cider mill presses. 674
- 366 Higginum Manufacturing Co., Higganum, Conn.** L 25.
- a* Plows and agricultural implements. 670
 - b* Corn-shellers, hay-spreaders, etc. 674
 - c* Cider-mills, meat-cutters, etc. 673
 - d* Milk-cooler. 675
- 367 Remington, E., & Sons, Ilion, N. Y.** O 19.
- a* Plows, cultivators, hoes, shovels. 670
 - b* Mower, horse and hand-rakes. 672
 - c* Cotton-gin. 673
 - d* Milk-cooler. 675
- 368 Pennsylvania Agricultural Works, York, Pa.** O and P 24.
- a* Plows, cultivators, and tools for cultivation. 670
 - b* Seed-planter. 671
 - c* Threshing-machines, horse-powers. 673
 - d* Cotton-gins, steam-engines, and agricultural steels. 674
- 369 New York Plow Co., New York, N. Y.** N 21.
- a* Plows, harrows, rollers, clod-crushers, etc. 670
 - b* Hay-rakes. 672
 - c* Corn-shellers. 673
 - d* Cider and wine mills. 674
- 370 Hillborn, Buckman, & Co., Newtown, Pa.** L 12.
- a* Plows. 670
 - b* Mower, horse-rake, etc. 672
 - c* Corn-sheller. 673
 - d* Fodder-cutter. 674
- 371 Wheeler & Mellick Co., Albany, N. Y.** Q 7.
- a* Wheel horse-rakes. 670
 - b* Horse hay-rakes. 672
 - c* Clover-huller, cider-mill and press, thrasher and separator, horse, railway, and lever power. 673
 - d* Feed-mill, cutter, wood-sawing machine, etc. 674
 - e* Dog-power for churning. 675
- 372 Allen, S. L., & Co., Philadelphia, Pa.**—Farm and garden tools. M 20. 671
- 373 Farmers' Friend Manufacturing Co., Dayton, Ohio.**—Grain, seed, and fertilizer drills. N 17. 671
- 374 Mast, P. P., & Co., Springfield, Ohio.**—Grain-drills and seed-sowers, broadcast seeder and cultivator, riding or walking cultivator, and plow-sulky. M 17. 671
- 375 McSherry, D. E., & Co., Dayton, Ohio.**—Grain and seed drills. M 18. 671
- 376 Petrie, James A., Jersey City, N. J.**—Ground-markers and furrowers. K 23. 671
- 377 Mechanicsburg Machine Co., Mechanicsburg, Ohio.**—Screw-feed grain-drill. L 18. 671
- 378 Baker, John C., Mechanicsburg, Ohio.**—Screw-feed grain-drill. L 18. 671
- 379 Haworth Planter Co., London, Ohio.**—Agricultural implements. L 18. 671
- 380 Clarridge, John, Mt. Sterling, Ohio.**—Corn and cotton-seed planter. M 17. 671
- 381 S. J. Waite Manufacturing Co., Worcester, Mass.** N 22.
- a* Breast drill, corner brace, saw-sett, and lathe. 671
 - b* Apple-parer. 674
- 382 Nash & Brother, New York, N. Y.**—Potato-planter. N 19. 671
- 383 Alling, Prudden, Norwalk, Ohio.**—Garden cultivator and seed-drill. N 19. 671
- 384 Bickford & Huffman, Macedon, N. Y.**—Grain-drills and attachments. L 18. 671
- 385 Hall, H. L., Chicago, Ill.**—Combined seed-sower and cultivator. L 19. 671
- 386 Vandiver Corn-Planter Co., Quincy, Ill.**—Corn-planter. M 26 and 28. 671
- 387 Beitzell, Henry, Centreville, Ind.**—Corn planter and drill combined. L 20. 671
- 388 Hoosier Drill Co., Milton, Ind.**—Wheat-drill with grass-seed attachment, corn-drill. K 19. 671
- 389 Sargent, Charles R., Newburyport, Mass.**—Garden-seed sower. N 19. 671
- 390 Johnson & Gere, Owego, N. Y.**—Grain-drill and attachments, fertilizer-sower. M 19. 671

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Catalogues on application.

Machines, Implements, and Processes of Manufacture.

- 391 Vandoran, F., Adrian, Mich.—** Corn-planter. M 22. 671
- 392 Asay & Wood, Philadelphia, Pa.—** Combined corn-planter, fertilizer-distributor, and deflecting cultivator. N 22. 672
- 393 Crowell, J. B., & Co., Green Castle, Pa.—** Grain, guano, and grass-seed drills. L 21. 672
- 394 Willoughby, James D., Philadelphia, Pa.—** Grain-drill, with and without fertilized attachment. L 22. 671
- 395 Sweeney, Hugh M., Worcester, Mass.—** Liquid fertilizing machine. L 22. 671
- 396 Springfield Manufacturing Co., Springfield, Ill.—** Corn-planter. L 19. 671
- 397 Worth, Andrew R., Nantucket, Mass.—** Drill-barrow seed-sower. L 20. 671
- 398 Reutzhler, D., & H., Belleville, Ill.—** Grain and seed drills. M 19. 671
- 399 Stevens, Seth, Fryeburg Centre, Maine.—** Corn-planter. P 26. 671
- 400 Seymour, John B., Philadelphia, Pa.—** Box-hoe seed-planter. T 8. 671
- 401 Rutschman Bros., Philadelphia, Pa., S 24.**
- a* Self-feeding hand-drill. 671
 - b* Meat-chopper. 674
- 402 Keystone Manufacturing Co., Sterling, Ill., L 19.**
- a* Corn-planter. 671
 - b* Corn-sheller, cider mill and press. 673
- 403 Esterly, George, & Son, White-water, Wis., P 20 and 21.**
- a* Cultivator and seeder combined. 671
 - b* Harvester, self-raking reaper. 672
- 404 Brown, George W., Galesburg, Ill., L 22.**
- a* Corn-planter. 671
 - b* Field corn-stalk cutter. 672
- 405 Goodell Co., Antrim, N. H. T 14.**
- a* Broadcast seed-sower. 671
 - b* Apple-parers, peach-parers, cherry-stoners, etc. 674
- 406 Hagerstown Agricultural Implement Manufacturing Co., Hagerstown, Md., R and S 26.**
- a* Grain, seed, and fertilizing drills. 671
 - b* Clover huller and cleaner. 673
 - c* Feed-cutter. 674
- 407 Williams Bros., Ithaca, N. Y. P 12.**
- a* Fertilizer and grain-sower. 671
 - b* Horse hay-rake. 672
 - c* Portable engine. 674
- 408 Adriance, Platt, & Co., New York, N. Y.—** Self-raking reapers and mowers. T 15. 672
- 409 Eagle Mowing and Reaping Machine Co., Albany, N. Y.—** Mowing and reaping machines. T 18. 672
- 410 Osborne, D. M., & Co., Auburn, N. Y.—** Mowing and reaping machines. O 13 and 14. 672
- 411 Wood, Walter A., Hoosac Falls, N. Y. S 13 and T 14.**
- a* Drovers. 671
 - b* Mowers, reapers, harvesters, etc. 672
- 412 Warder, Mitchell, & Co., Springfield, Ohio.—** Reapers and mowers. P 15. 672
- 413 Thomas, John H., & Sons, Springfield, Ohio.—** Sulky-spring tooth hay-rake. C 15. 672
- 414 Whiteley, Fassler, & Kelly, Springfield, Ohio.—** Reapers and mowers. O 15 and 16. 672
- 415 Dayton Machine Co., Dayton, Ohio.—** Self-dumping and hand-lever hay-rakes. L 15. 672
- 416 Ohmer, Augustus I., Hamilton, Ohio.—** Hand mowing-machines. M 13. 672
- 417 Stoddard, John W., & Co., Dayton, Ohio.—** Sulky horse hay-rakes. M 15. 672
- 418 Barnes, George, & Co., Syracuse, N. Y.—** Mower-knives, reaper-sickles, spring keys, and cotters. M 15. 672
- 419 Taylor, B. C., Dayton, Ohio.—** Self-dumping horse-rakes. L 24. 672
- 420 Coates, A. W., Alliance, Ohio.—** Lock-lever horse hay-rake. L 15. 672
- 421 Walker, Benjamin L., Sing Sing, N. Y. M 14.**
- a* Lawn-mowers, screw-wrench, ratchet-drill. 672
 - b* Can-opener. 674
- 422 Chadhorn & Coldwell, Newburgh, N. Y.—** Lawn-mower. N 13. 672
- 423 Wisner, J. E., Friendship, N. Y.—** Self-discharging rake. M 25. 672
- 424 Converse, Bolivar C., Springfield, Ohio.—** Reaping-machine. R 16. 672
- 425 Eagle Company, Riverton, Conn.—** Grain, grass, and bush scythes, grass-hooks, corn and hay knives. T 25. 672
- 426 Huber Manufacturing Co., Marion, Ohio.—** Revolving hay-rake. L 16. 672
- 427 Dutton, R., Yonkers, N. Y.—** Reaping and mowing machine. Q 24. 672
- 428 Rochester Agricultural Works, Rochester, N. Y.—** Reapers and mowers. F 14. 672
- 429 Leiberling, J. F., Akron, Ohio.—** Mower and attachments. Q 14. 672
- 430 Whitman & Miles Manufacturing Co., Akron, Ohio.—** Mowing and reaping machine knives, sickles, and sections. T 18. 672
- 431 Aultman, Miller, & Co., Akron, Ohio.—** Mower with table-rake reaper. Q 15. 672
- 432 Spink, James L., & Co., Minneapolis, Minn.—** Mowers and reapers. Q 14. 672
- 433 Bellaire Manufacturing Co., Bellaire, Ohio.—** Mower and reaper. P 14. 672
- 434 Russell, C., & Co., Canton, Ohio.—** Self-raker, reaper, and mower combined, single mower. R 14. 672
- 435 Tschop, Albert, Harrisburg, Pa.—** Self-dumping wheel hay-rake. L 15. 672
- 436 Hewit, John C., Pennagrove, N. J.—** Potato-digger. M 16. 672
- 437 Bryan & Clement, Troy, N. Y.—** Reversible mower. Q 13. 672
- 438 Graham, Emien, & Passmore, Philadelphia, Pa.—** Lawn-mower. L 13 and 14. 672
- 439 Nellis, A. J., Pittsburg, Pa.—** Harpoon horse hay-fork. M 15. 672
- 440 Field & Carpenter, Port Chester, N. Y.—** Self-discharging hay-rake. L 15. 672

AGRICULTURE.

Machines implements, and Processes of Manufacture.

- 441 Clegg, Wood, & Co., Dayton, Ohio.**—Self-discharging hay-rake. L 15. 672
- 442 Hills' Archimedean Lawn-Mower Co., Hartford, Conn.**—Lawn-mowers. N 13. 672
- 443 Norton, James, Hightstown, N. J.**—Potato-digger. M 16. 672
- 444 Fisher, Henry, Canton, Ohio.**—Prairie-mower, knife-grinders, and knife-sections. T 24. 672
- 445 Gibbs & Sterrett Manufacturing Co., Corry, Pa.**—Mower and attachments, hay-conveyer. Q 18. 672
- 446 The Johnston Harvester Co., Brockport, N. Y.**—Self-raking reaper, harvester, mower, and automatic grain-binder. O 20 and 21. 672
- 447 Hurlburt, Samuel G., Laporte, Ohio.**—Steel-tooth wheel-rake. L 15. 672
- 448 Wright, James W., Minneapolis, Minn.**—Grain-harvester and binder. N 22. 672
- 449 Superior Mower and Reaper Co., Wheeling, W. Va.**—Mowing-machine, mower and reaper. P 16. 672
- 450 Bradley Manufacturing Co., Syracuse, N. Y.**—Self-dumping hay-rake, mower, and self-raking harvester. P 14. 672
- 451 Norwalk Lawn-Mower Co., Norwalk, Conn.**—Lawn-mowers. M 14. 672
- 452 Chapman Binder Co., Rochester, Minn.**—Reaper and binder. T 17. 672
- 453 Towanda Eureka Mower Co., Towanda, Pa.**—Mower and reaper. Q 19. 672
- 454 Bartram Sewing-Machine Co., Danbury, Conn.**—Revolving cutter lawn-mowers. R 14. 672
- 455 Perry, Stuart, Newport, N. Y.**—Hay-tedder. M 15. 672
- 456 St. Paul Harvester Co., St. Paul, Minn.**—Harvester. P 13. 672
- 457 Hand, S. A., Philadelphia, Pa.**—Lawn-mower. M 15. 672
- 458 Mayo, M. C., Boston, Mass.**—Mowing-machine. T 19. 672
- 459 Nye, S. R., Winchendon, Mass.**—Horse-rake. L 15. 672
- 460 Kenyon, William G., Wakefield, R. I.**—Mowing-machine. P 19. 672
- 461 Maule, James S., Lewisburg, Pa.**—Mower and automatic reaper. S 17. 672
- 462 Ithaca Agricultural Works, Ithaca, N. Y.**—Wheel-rake and attachments. N 15. 672
- 463 Holt, Hiram, & Co., East Wilton, Me.**—Grass and bush scythes, hay-knives, etc. T 25. 672
- 464 Read, C. A., Bridgeport, Conn.**—Lawn-mower. M 14. 672
- 465 Morgan, D. S., & Co., Brookport, N. Y.**—Reaping and mowing machines. P 18. 672
- 466 Goodwin, William F., Stetson, N. J.**—Mowing and reaping machine. Q 13. 672
- 467 Kenyon Brothers, Carbondale, Pa.**—Potato-digger. M 15. 672
- 468 Mann, H. F. Pittsburgh, Pa.**—Harvesting and mowing machine. S and T 19. 672
- 469 Gammon & Deering, Chicago, Ill.**—Harvester, automatic binder, windmill. O 20 and 21. 672
- 470 Easter, J. D., & Co., Chicago, Ill.**—Harvester. Q 16. 672
- 471 Otis Brothers & Co., New York, N. Y.**—Mowing-machine. S 22. 672
- 472 Harrison Manufacturing Co., Lansing, Mich.**—Rubber-lined knife-head for reapers and mowers. T 17. 672
- 473 Champion Machine Co., Springfield, Ill.**—Reapers, mowers, rakers, and droppers. Q 15. 672
- 474 Bushnell, S. H., Fairport, N. Y.**—Sulky rake. N 15. 672
- 475 Lemis, James H., Detroit, Mich.**—Potato-digger. N 15. 672
- 476 Richardson Manufacturing Co., Worcester, Mass.**—Combined mower and reaper, hay-tedder, etc. M 14. 672
- 477 West, Henry T., Milwaukee, Wis.**—Lawn-mower. M 14. 672
- 478 Morse, Ben., Ithaca, N. Y.**—Horse-rake. L 16. 672
- 479 Lee, James, Jr., Stonersville, Pa.**—Hay-tedder with rake. L 15. 672
- 480 Westfall, D. B., Lyons, N. Y.**—Potato-digger. L 16. 672
- 481 Gulick, Edwin, New Brunswick, N. J.**—Safety-seat for harvester and mowers. T 8. 672
- 482 Myers, Hiram, Springfield, Ohio.**—Sulky hay-rake and stuffing-box. R 28. 672
- 483 Vermont Farm Machine Co., Bellows Falls, N. V.**—Gleaner, horse, hay, and grain-rake. K 15. 672
- 484 Dunn Edge Tool Co., West Waterville, Me.**—Scythes, axes, grass-hooks, hay, straw, and corn knives. R 24. 672
- 485 Riggs, M. B., Palmyra, N. Y.**—Potato-digger. L 26. 672
- 486 Stevens, Ansel, Gorham, Maine.**—Mower. T 21. 672
- 487 McMentry, John, Lexington, Ky.**—Reaper and mower. P 17. 672
- 488 McPherson, D., Caledonia, N. Y.**—Automatic grain-binder. R 17. 672
- 489 Patrons' Manufacturing Association, Indianapolis, Ind.**—Direct draft mower. L 25. 672
- 490 Aultman, C., & Co., Canton, Ohio.** Q and R 22.
a Mower, dropper, and raker. 672
b Thresher. 673
- 491 Stratton & Cullum, Meadville, Pa.** R 15.
a Mowing-machine. 672
b Hay-loading machine. 673
- 492 Sandwich Manufacturing Co., Sandwich, Ill.** S and T 20-21.
a Harvester. 672
b Self-feeding corn-sheller. 674
- 493 Rue, George W., Hamilton, Ohio.** N 15.
a Garden-cultivator. 670
b Potato-digger. 672
- 494 Pritz, A., & Sons, Dayton, Ohio.** S 16.
a Grain-drill. 670
b Field-roller. 672
c Self-raking reaper and mower. 672

Machines, Implements, and Processes of Manufacture.

- 495** Herbert & Raymond, Philadelphia, Pa. P 10.
 a Mower and hay-rakes. 672
 b Threshing-machine and clover-mill. 673
 c Portable steam-engine, portable saw-mill, and hay-cutters. 674
- 496** Burt, Hildreth, & Co., Harvard, Mass. N 14.
 a Horse-rakes, car-brakes, and broom-corn scrapers. 672
 b Horse-powers. 673
 c Wood-sawing and splitting machine. 674
- 497** Cohu, A. B., New York, N. Y. P 28.
 a Rake. 672
 b Corn-sheller, stalk-cutter, hand-saw-mill. 674
 c Churn. 675
- 498** Richardson, William H., Philadelphia, Pa.—Corn-husking machine, machine for cutting standing corn and husking. T 22. 673
- 499** Parvins, R. C., Farmington, Ill.—Steam-motor and plow. L 24. 673
- 500** Durston, Wood, & Co., Syracuse, N. Y.—Grain and seed separator and fanning-mill. T 27. 673
- 501** Albion Coffee-Huller Co., New York, N. Y.—Coffee hulling, polishing, and separating machine. O 22. 673
- 502** Brayley, James, Buffalo, N. Y.—Threshing-machine and double pinion horse-power. T 7 and 8. 673
- 503** Shreiner, J. H., Mechanicsburg, Pa. T 26.
 a Grain-drill and shovels. 671
 b Grain-fan and seed-separator. 673
- 504** Case, J. I., & Co., Racine, Wis.—Threshing-machine. T 9. 673
- 505** Allen, R. H., & Co., New York, N. Y.—Spiral corn-husker. Q 23. 673
- 506** Heebner & Sons, Lansdale, Pa.—Horse-powers, threshers, separators, and cleaners. O 7. 673
- 507** Cartrite, Barnard, Norwalk, Ohio.—Fanning-mill, box of grain and fixtures. T 28. 673
- 508** Kenosha Fanning-Mill Co., Kenosha, Wis.—Fanning-mill. S 28. 673
- 509** Miller, A. S., Republic, Ohio.—Fruit-ladder. T 23. 673
- 510** Fay, C. J., Camden, N. J.—Portable hay and cotton press. R 11. 673
- 511** Spence, L., Martin's Ferry, Ohio.—Thresher and cleaner, double cleaner, horse-power, etc. O 8. 673
- 512** Brown Cotton-Gin Co., New London, Conn.—Cotton-gin with feeder and condenser. P 21. 673
- 513** Nichols, Shepard, & Co., Battle Creek, Mich.—Grain-thresher, separator, and cleaner. R 7 and 8. 673
- 514** Kenyon, Silas R., Newark, N. J.—Corn-husking machine. S 26. 673
- 515** Hagerstown Steam Engine and Machine Co., Hagerstown, Md.—Grain threshing, separating, cleaning, and bagging machine. R 26. 673
- 516** Harder, Minard, Cobleskill, N. Y.—Horse-railway power, thresher and cleaner, model of railway horse-power. M and N 7. 673
- 517** Ertel, George, Quincy, Ill.—Portable hay and cotton press. Q 10. 673
- 518** Read, Calvin D., & Ellis D., Ayer, Mass.—Corn-sheller. N 22. 673
- 519** Sheeler, Buckwalter, & Co., Rogers' Ford, Pa.—Horse-power and threshing-machine. T 13. 673
- 520** Kahnweiler, David, New York, N. Y.—Cotton-seed huller. S 11. 673
- 521** Judkins, Mark D., Osakio, Minn.—Self-sacking grain-separator. T 8. 673
- 522** Shields & Bro., Philadelphia, Pa.—Corn-huskers. B 24. 673
- 523** Westinghouse, G., & Co., Schenectady, N. Y.—Grain-threshing machine. T 25. 673
- 524** Pumphrey, W. F., Fairfield, Iowa.—Seed-mill and grain-separator. S 7. 673
- 525** Wood, O. K., & Co., West Chazy, N. Y.—Grain and seed separator. T 28, wall. 673
- 526** Silver & Denning Manufacturing Co., Salem, Ohio. Q 23.
 a Endless chain, two horse-power, for general purposes. 673
 b Drag sawing-machine, feed-cutters, etc. 674
- 527** Gaar, Scott, & Co., Richmond, Ind. O 9.
 a Grain thresher, separator, and cleaner. 673
 b Portable farm-engine. 674
- 528** Manley, Almond D., Washington, Mich. K and Q 9.
 a Mounted railway tread-power and grain-thresher. 673
 b Circular wood-saw. 674
- 529** Blymyer Manufacturing Co., Cincinnati, Ohio. M and N 8. 673
 a Thresher and cleaner, corn-cob crushers, etc. 673
 b Cane-mills, steam-engine, sugar-evaporator, etc. 674
- 530** Evans & Baird, West Chester, Pa. T 7 and 8.
 a Horse-railway power and thresher. 673
 b Dairy churn and power. 673
- 531** Rankin Manufacturing Co., Allegheny, Pa.—Hand and power meat-choppers, sausage-stuffers, portable engine, etc. P 11 and 12. 674
- 532** Post, C. C., Burlington, Vt.—Implements for making maple sugar. C 24. 674
- 533** Slocum, W. H., & Bro., Philadelphia, Pa.—Apple-parer and corer, meat-cutter, raisin and currant cleaner. T 23. 674
- 534** Boyer, Wm. L., & Bro., Philadelphia, Pa.—Farm grist-mills, railway horse-power, feed-cutter, lawn-mowers, saw-table, broom-winder. R 24. 674
- 535** Nittinger, A., jr., & Son, Philadelphia, Pa.—Butchers' machinery, tools, and supplies. T 24. 674
- 536** J. C. Hoadley Co., Lawrence, Mass.—Portable steam-engines. L 7. 674
- 537** Randall, C. B., New York, N. Y.—Fruit and vegetable parer, slicer, and corer, combination knife, scythe and scissor-sharpener, can-opener, and cork-screw. N 22. 674
- 538** Ross, John, Williamsburg, N. Y.—Grain-mills, paint and drug mills, etc. R 23. 674
- 539** Hotsenpiller & Co., Springfield, Ohio.—Hominy-mill. M 22.

AGRICULTURE.

Machines, Implements, and Processes of Manufacture.

- 540** Douglas, W., & B., Middletown, Conn.—Garden engines. C 18. 674
- 541** Hirzel, John G., Wilmington, Del.—Meat-choppers. S 23. 674
- 542** Dederick, P. K., & Co., Albany, N. Y.—Hay and cotton presses, bale-tie machines, coal-tubs, dumping-car, brick and tile machine, etc. Q 10. 674
- 543** Bush & Smith, West New Brighton, N. Y.—Apple parer, corer, and quartermacer. N 22. 674
- 544** Furst and Bradley Manufacturing Co., Chicago, Ill.—Plows, harrows, hayrakes, etc. O 25. 674
- 545** Garst, David W., Washington, D. C.—Dried beef-chopper. S 23. 674
- 546** Munson Brothers, Utica, N. Y.—Wheat-flouring and corn-grinding portable mill, millstone eye, spindles, and oil-tight bush. R 24. 674
- 547** Conrad, E. C., Philadelphia, Pa.—Coffee-machine. M 26. 674
- 548** Sandusky Machine and Agricultural Works, Sandusky, Ohio.—Cylinder corn-sheller. M 16. 674
- 549** Lombard, Daniel, Boston, Mass.—Rice and coffee cleaning mortars, coffee-shelling machine. P 23. 674
- 550** Dickey, A. P., Racine, Wis.—Fanning-mills. T 27. 674
- 551** Swan, C. S., Tamaroa, Ill.—Cotton, hay, hemp, and straw press. R 10. 674
- 552** Mansfield Machine Works, Mansfield, Ohio.—Mounted portable steam-engine. P 8. 674
- 553** Mitchell, J. E., Philadelphia, Pa.—Farmers' grindstones, mounted, mower, knife-grinders, scythe and whetstones. Grindstone of 1776. N 20. 674
- 554** Hazard, Thomas, Wilmington, Ohio.—Straw-cutters. O 22. 674
- 555** Sedgbeek & Miller, Painesville, Ohio.—Farmers' feed and corn mill. R 24. 674
- 556** Bruner, M., Jr., Fremont, Ohio.—Hay-press. R 11 and 12. 674
- 557** Bailey Wringing-Machine Co., New York, N. Y.—Meat and vegetable choppers, fruit and meat-presses. S. 24. 674
- 558** Bushfield, W. H., Jersey City, N. J.—Dried-beef cutter. S 23. 674
- 559** Whittemore, D. H., Worcester, Mass.—Apple parer and slicer, meat-cutter, etc. N 22. 674
- 560** Foster, Calvin A., Fitchburg, Mass.—Meat-chopper and apple-parer. S 23. 674
- 561** Pierpont, C., & Co., New Haven, Conn.—Fodder-cutter. P 22. 674
- 562** Fitzhugh, J. R., Philadelphia, Pa.—Hay-elevator. T 28. 674
- 563** Hall, S. Z., New London, Conn.—Self-feeding cotton-gin. P 21. 674
- 564** Bates, Hyde, & Co., Bridgewater, Mass.—Power and hand cotton-gins. R 10. 674
- 565** Peekskill Manufacturing Co., New York, N. Y.—Mills for grinding sugar-cane. T 11. 674
- 566** Bradford, W. A., & Co., Chicago, Ill.—Cider-mill. F 13, A 13. 674
- 567** Dernell, H. F., & Co., Athens, N. Y.—Tools for cutting and storing ice. N 24. 674
- 568** Chesley, Plumer, Chelsea, Mass.—Meat-chopper. R 24. 674
- 569** Hanck, S., & Bro., Lebanon, Pa.—Vegetable-cutters. M 22. 674
- 570** Longaker, Thomas F., Philadelphia, Pa.—Stable-hook. C 20. 674
- 571** Schenck, Marcus P., Fulton, N. Y.—Fruit-press, apple and horseradish grater. F 12. 674
- 572** Peabody, George H., Brooklyn, N. Y.—Rice huller and polisher. L 16. 674
- 573** Boomer & Boschert Press Co., Syracuse, N. Y. S and T 12.
a Wine and cider press, lard, tallow, pork-packers', and herb presses. 673
b Apple-grater. 674
- 574** Ross, E. W., & Co., Fulton, N. Y. P 22.
a Feed-cutter, straw-cutter for paper-mills. 674
b Crank paddle-churn. 673
- 575** Treat, J. A., Cleveland, Ohio.—L 12.
a Washing boiler, and automatic blind governor. 674
b Factory churn. 675
- 576** Speakman, Miles, & Co., West Chester, Pa. M 13.
a Corn-sheller, insect-destroyer, pruning-shears, etc. 674
b Butter-worker and butter-printing table. 675
- 577** Pilling, Geo. P., Philadelphia, Pa.—Milking-tubes. M 12. 675
- 578** Packer, Charles W., Philadelphia, Pa.—Ice-cream freezers. O 12. 675
- 579** Koehler, J. G., Philadelphia, Pa.—Cedar-ware, churns, measures, etc. M 10. 675
- 580** Clement & Dunbar, Philadelphia, Pa.—Cedar-ware, churns, and ice-cream freezers. O 11. 675
- 581** Blatchley, C. G., Philadelphia, Pa.—Horizontal ice-cream freezer, cucumber-wood pumps. O 10. 675
- 582** Carter, Henry C., New York, N. Y.—Butter-pail. M 10. 675
- 583** Markham, H. C., & D. C., Lyons Falls, N. Y.—Curd-sink. M 12. 675
- 584** Clough, De Witt C., Auburn, N. Y.—Dash-churn, journal-box. M 10. 675
- 585** Moos, Joseph, Philadelphia, Pa.—Ice-cream refrigerator and ice-cream shipping-apparatus. O 12. 675
- 586** Chick, W. H., & Co., St. Louis, Mo.—Churns, egg-beater, and ice-cream freezers. M 11. 675
- 587** Keen & Hagerty, Baltimore, Md.—Ice-cream freezers, cake-mixer, and egg-beater. O 10. 675
- 588** Emmert, William P., Freeport, Ill.—Butter-churns, tread-power, etc. M 12. 675
- 589** Elliget, James, Cleveland, Ohio.—Bottles, kegs, mugs, and pitchers. M 10. 675
- 590** Reid, A. H., Philadelphia, Pa.—Butter-worker. L 11. 675
- 591** Rogers, Francis P., Philadelphia, Pa.—Milk-cans, pans, buckets, strainers, butter-kettles, etc. L 11. 675

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Strong, Pure, and Rich Blood, Increase of Flesh and Weight, Clear Skin, and Beautiful Complexion secured to all through

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Every drop of the Sarsaparillian Resolvent communicates through the Blood, Sweat, Urine, and other fluids and juices of the system the vigor of life, for it repairs the wastes of the body with new and sound material. Scrofula, Consumption, Glandular Disease, Ulcers in the Throat, Mouth, Tumors, Nodes in the Glands and other parts of the system, Sore Eyes, Strumous Discharges from the Ears, and the worst forms of Skin Diseases, Eruptions, Fever Sores, Scald Head, Ring Worm, Salt Rheum, Erysipelas, Acne, Black Spots, Worms in the Flesh, Tumors, and all Weakening and Painful Discharges and Night Sweats are within the curative range of this wonder of Modern Chemistry, and a few days' use will prove to any person using it for either of these forms of disease, its potent power to cure them. If the patient, daily becoming reduced by the wastes and decomposition that are continually progressing, succeeds in arresting these wastes, and repairs the same with new material, made from healthy blood, and this the Sarsaparillian will and does secure, a cure is certain; for, when once this remedy commences its work of purification and succeeds in diminishing the loss of wastes, its repairs will be rapid, and every day the patient will feel himself growing better and stronger, the food digesting better, appetite improving, and flesh and weight increasing. Not only does the **SARSAPARILLIAN RESOLVENT** excel all known remedial agents in the cure of Chronic, Scrofulous, Constitutional, and Skin Diseases, but it is the only positive cure for Kidney, Bladder, and Urinary Diseases, Gravel, Diabetes, Dropsy, Stoppage of Water, Incontinence of Urine, Bright's Disease, Albuminuria, and in all cases where there are brickdust deposits, or the water is thick, cloudy, mixed with substance like the white of an egg, or threads like white silk, or there is morbid, dark, bilious appearance, and white bonedust deposits, and when there is a prickling, burning sensation when passing water, and pain in the Small of the Back along the Loins.

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HANNAH P. KNAPP.

R. R. R.

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Will afford instant ease. Inflammation of the Kidneys, Inflammation of the Bladder, Inflammation of the Bowels, Congestion of the Lungs, Sore Throat, Difficult Breathing, Palpitation of the Heart, Hysterics, Croup, Diphtheria, Catarrh, Influenza, Headache, Toothache, Neuralgia, Rheumatism, Cold Chills, Ague Chills. The application of the READY RELIEF to the part or parts where the pain or difficulty exists will afford ease and comfort. Twenty drops in a half tumbler of water will, in a few moments, cure Cramps, Spasms, Sour Stomach, Heartburn, Sick Headache, Diarrhea, Dysentery, Colic, Wind in the Bowels, and all Internal Pains. Travelers should always carry a bottle of RADWAY'S RELIEF with them. A few drops in water will prevent sickness or pains from change of water. It is better than French Brandy or Bitters as a stimulant.

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- 593 Guernsey, Daniel (and George** Plumb, Bangor, N. Y.). Watertown, N. Y.—Gilt-edge milk-pans and cooler. L 10. 675
- 594 Shaw, Philander, Scituate, Mass.**—Butter-working machine, butter-mould, and stamp. L 7. 675
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- 596 Murdock, Albert L., Boston, Mass.**—Dairies of the different breeds of cattle. H 17. 675
- 597 Justice, L. B., Philadelphia, Pa.**—Machine for making ice-cream, water ices, frozen fruits, etc. O 10. 675
- 598 Porter Blanchard's Sons, Concord, N. H.**—Churns. N 12. 675
- 599 Thompson, S. W., jr., Detroit, Mich.**—Barrel-shoos. C 20. 675
- 600 Hardin, L. S., Louisville, Ky.**—New method of setting milk for making butter. M 12. 675
- 601 Bartleson, John W., Churchville, Pa.**—Churn, butter-worker, and cream-regulator. M 11. 675
- 602 Oppenheimer, Solomon, Newark, N. J.**—Safety milking-pail. L 12. 675
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- 603 Ashley, H. A., Springfield, Ohio.**—Ditching-machine. D 19. 680
- 604 Huber Manufacturing Co., Marion, Ohio.**—Revolving road-scaper. L 16. 680
- 605 Murdock, John, & Son, Poseyville, Ind.**—Straw-stacking machine. M 15. 680
- 606 Bowen, C. M., Maine Avenue, N. J.**—Stump, grub, and rock extractor. D 17. 680
- 607 Randolph, Theodore F., Morris-town, N. J.**—Ditcher and excavator. C 18. 680
- 608 Fay, C. J., Camden, N. J.**—Stump and rock lifter. R 11. 680
- 609 Hall, S. W., Elmira, N. Y.**—Fencing-machine, machine-made worm-fence, bracket, and wire fences. O 23. 680
- 610 Patterson, William, Salem, N. J.**—Wrought-iron road-scaper. D 18. 680
- 611 Cotton, A. C., Vineland, N. J.**—Stone and stump extractor. D 17. 680
- 612 Drake & Parmley, Painesville, Ohio.**—Fence-post base. D 18. 680
- 613 Rhodes & Waters, Elyria, Ohio.**—Post-hole digger. C 19. 680
- 614 Starbuck, Nathan, Wilmington, Ohio.**—Mounted ditcher. C 17. 680
- 615 Thompson, Woodard, Gardiner, Me.**—Self-loading and unloading hot-road scraper, model of scraper, and model of railway joint. C 19. 680
- 616 Leatherbarrows, John, Philadelphia, Pa.**—Wrought-iron and wire fences. D 17. 680
- 617 Pioneer Iron Works, Brooklyn, N. Y.**—Portable iron railroad and steam road-roller. D 22. 680
- 618 Chicago Scraper and Ditcher Co., Chicago, Ill.**—Scraper and ditcher for roadmaking, repairing, and excavating. C 20. 680
- 619 Potts, William W., Swedeland, Pa.**—Iron-post portable fence. D 23. 680
- 620 Rumford Chemical Works, Providence, R. I.**—Fertilizers, bone charcoal, etc. K 21. 680
- 621 Josiah J. Allen's Sons, Philadelphia, Pa.**—Guano, bone, and other fertilizers. D 28. 680
- 622 Matfield Fertilizer Co., Boston, Mass.**—Chemical fertilizers. D 26. 681
- 623 Ward's Fertilizer Co., Boston, Mass.**—Odorless fertilizers. D 28. 681
- 624 United States Fertilizing and Chemical Co., Philadelphia, Pa.**—Phosphatic salts, soluble bone, and fertilizers. C 28. 681
- 625 Baugh & Sons, Philadelphia, Pa.**—Raw bone superphosphate, ground raw bones; nitrogen. D 28. 681
- 626 Matheys, Charles F., Philadelphia, Pa.**—Nitro-phosphate and ground bone. D 28. 681
- 627 Ames, Manning, & Ames, Hagers-town, Md.**—Buffalo-bone meal for agricultural purposes. C 26. 681
- 628 Crocker, L. L., Buffalo, N. Y.**—Fertilizers for grain, tobacco, cotton, etc., plant-food for plants and flowers. C 26. 681
- 629 Peck Brothers, Northfield, Conn.**—Bone-dust. D 28. 681
- 630 Franklin Glue Works, Pittsburgh, Pa.**—Bone-dust, etc. K 20. 681
- 631 White, George E., New York, N. Y.**—Superphosphates, acid bone-black, raw materials for fertilizers, and agricultural chemicals. D 28. 681
- 632 Upton, George, Boston, Mass.**—Superphosphates. K 20. 681
- 633 Central Oil Mills, Selma, Ala.**—Cotton-seed meal and fertilizers. C 25. 681
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- 636 Atkinson, Empson, Woodstown, N. J.**—Machine for cutting and setting up corn, road-scaper. S 28. 681
- 637 Harrisburg Fertilizer Co., Harrisburg, Pa.**—Flour of bone, ground bone, superphosphate, animal compost, and lubricators. B 25. 681
- 638 Walton, Whann, & Co., Wilming-ton, Del.**—Artificial fertilizers, bone-meal, and ground bone. C 25. 681
- 639 Kyser, James, & Son, Cleveland, Ohio.**—Whiffletree, check, and neck-yoke fastenings. M 10. 682
- 640 Remington, E., & Sons, Ilion, N. Y.**—Carriage gearing. P 20. 682
- 641 Higganum Manufacturing Co., Higganum, Conn.**—Trucks. L 25. 682
- 642 Minniss, Thos. S., Meadville, Pa.**—Endless-track locomotive. L 24. 682

AGRICULTURE.

Agricultural Engineering, Administration, Management.

- 643** Mount, Joseph K., & Co., Hightstown, N. J.—Model hay-conveyer. C 24. 682
- 644** Beecher, C. T., Waterbury, Conn.—Whiffletree gear. N 22. 682
- 645** Cohu, A. B., New York, N. Y.—Wagon-jack. P 28. 682
- 646** State of Massachusetts, Boston, Mass.—Maps and plans of farm buildings. E and F 23. 683
- 647** Osborne Manufacturing Co., New York, N. Y.—Bird and animal cages. D 25. 683
- 648** Douglas, W., & B., Middletown, Conn.—Agricultural and liquid manure-pumps. C 18. 683
- 649** Gay & Bryant, Dresden, Ohio.—Post-hole digger. C 19. 683
- 650** Shields & Bro., Philadelphia, Pa.—Tanned hog's head, hog-rings and holders. B 24. 683
- 651** Collings, E. Z., Waterford, N. J.—Cranberry-plants growing, representing cranberry-bog. C 20. 683
- 652** G. Boyd & Co., Philadelphia, Pa.—Fruit and grain-dryer. C 22. 683
- 653** Lockwood, James L., & Co., Stamford, Conn.—Portable fruit-drier. C 24. 683
- 654** Leonard, Henry, Basil, Ohio.—Revolving buckeye-ball on pedestal and college building. C 24. 683
- 655** Murphy, R. R., Fulton, Ill.—Honey extractor, for removing honey from the comb. C 24. 683
- 656** Gunther, G., New York, N. Y.—Brass, silver-plated, and japanned bird-cages. C 25. 683
- 357** Murphy & Broom, Philadelphia, Pa.—Bird-cages, wire garden-furniture, rustic work, etc. C 25. 683
- 658** Wimpfheimer, David, Philadelphia, Pa.—Automatic vinegar apparatus. D 23. 683
- 659** Harris, Milo, Jamestown, N. Y.—Domestic fruit-dryer, model of lumber-kiln and of coal-oil still. D 23. 683
- 660** Ryder, B. L., Chambersburg, Pa.—American drier or pneumatic evaporator. D 24. 683
- 661** D'Heureuse, R., New York, N. Y.—Apparatus for air-treatment, fermenting, germinating, preserving, and curing organic substances. D 24. 683
- 662** Lindermann, O., & Co., New York, N. Y.—Bird and animal cages. D 25. 683
- 663** Williams, John, South Haven, Mich.—Model of evaporator. D 24. 683
- 664** Goodrich, C. C., & F. W., Portland, Conn.—Tobacco-hook with wilting-frame and builders' horse. D 25. 683
- 665** Kappe, W. J. H., Quincy, Ill.—Transportation coop for live poultry. D 25. 683
- 666** Hendryx & Bartholomew, Ansonia, Conn.—Bird cages and trimmings. D 25. 683
- 667** Conrad, E. C., Philadelphia, Pa.—Bird cage. D 25. 683
- 668** O'Neill, Wm. C., & Co., Philadelphia, Pa.—Kegs and barrels made with single staves. F 28. 683
- 689** Elphee, Edmund, Montezuma, N. Y.—Grain-seed wreath-picture, representing the harvest of 1875. H 15. 683
- 670** Foot, Scovill D., New York, N. Y.—Portable fruit-preserved. I 23. 683
- 671** Vermont Farm-Machine Co., Bellows Falls, Vt.—Sugar-evaporator, and fixtures for making sugar. K 15. 683
- 672** Wood, Robert, & Co., Philadelphia, Pa.—Horse stalls, and fixtures for same. L 10. 683
- 673** Shaw, Philander, Scituate, Mass.—Beehive, with comb and hive of bees. M 12. 683
- 674** Dana, C. H., West Lebanon, N. H.—Automatic label-machine, labels, punches, and registers for marking live-stock. N 12. 683
- 675** Deardorff, Isaac N., Canal Dover, Ohio.—Smoke-house stove. N 21. 683
- 676** Betts, Albert C., Troy, N. Y.—Machine for making wire fencing, with samples. P 23. 683
- 677** U. S. Wind-Engine and Pump Co., Batavia, Ill.—Windmills for pumping water, etc. Q 23. 683
- 678** Michigan State Agricultural College.—Soils. H and I 20 to 21. 690

Tillage and General Management.

- 679** Himer, C. G., Allentown, Pa.—Artificial food for cattle. B 28. 692
- 680** Phillips, J. B., Philadelphia, Pa.—Devices for training and educating horses. B 26. 692
- 681** Miller, Frederick A., Philadelphia, Pa.—Condition powder for live-stock. B 26. 692
- 682** Hoepfner, Martin, Philadelphia, Pa.—Prepared food for cage-birds. B 28. 692
- 683** Greenough, J. J., Syracuse, N. Y.—Machine for cleaning animals. B 22. 692
- 684** Long, J. C., jr., Philadelphia, Pa.—Prepared food for mocking-birds; variety of grains and seeds for feeding birds, pigeons, and poultry; bird invigorator for restoring birds to health and song; stone drinking fountains, etc. B 26. 692
- 685** Kirk, Charles H., & Co., Philadelphia, Pa.—Prepared food for horses and cattle. B 26. 693
- 686** Ausable Horse Nail Co., New York, N. Y.—Horseshoe nails. B 24. 693
- 687** Caryl, A. H., & Son, Forge Village, Mass.—Horseshoe nails. B 24. 693
- 688** Burden, H., & Sons, Troy, N. Y.—Working model of horseshoe machine, samples of horse-shoes, boiler rivets, and merchant iron. B 24. 693
- 689** Tallman, G. W., New York, N. Y.—Elastic hose stocking. B 23. 693
- 690** American Shearer Manufacturing Co., Nashua, N. H.—Shearing and clipping machines. B 22. 693
- 691** Putnam, S. S., & Co., Neponset, Mass.—Horse-shoe nails. B 24. 693
- 692** Empire State Horse Nail Co., Penn Yan, N. Y.—Forged horseshoe nails, plain, polished, and blued. B 24. 693

Veterinary Appliances.

- | | |
|---|---|
| 693 Smith, Aaron W., Manchester,
N. H.—Jointed horseshoes. B 24. 693 | 695 Rhode Island Horseshoe Co.,
Providence, R. I.—Machine-hammered
horseshoes. B 23. 693 |
| 694 Atkins, J. L., Nashville, Tenn.—
Horseshoes and plates. B 24. 693 | 696 Ward, Henry A., Rochester, N. Y.—
Stuffed Bactrian camel and Shetland
pony. K 26 and 27. 693 |
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GREAT BRITAIN.

Agricultural, Animal, and Vegetable Products.

Agricultural Products.

- 1** Yuille, Andrew, Glasgow.—Essences of coffee and chocolate, vinegar, coffee and milk, condensed milk. 623
- 2** Turner, Reuben, Panther, Peterborough.—Food for infants, cocoas, chocolates, etc. 623

Land Animals.

- 3** Walsingham, Lord, Thetford, Norfolk.—Live-stock, Southdown rams, and ewes. 632

Water Animals, Fish Culture, and Apparatus.

- 4** Hoare, John, London.—Specimens of emasculated salmon. 641

Animal and Vegetable Products.

- 5** Chapman, Edwin, & Co., London.—Koumiss, a beverage prepared from cow's milk, koumiss extract, for converting milk into koumiss. 651
- 6** Evans & Stafford, Leicester.—Stilton cheese. 651
- 7** Hooker, J., London.—A large tin of milk which has been exposed to the air for five years, also desiccated milk, condensed milk, and other preparations made with milk. 651
- 8** Hooper, Cleeve, jr., Bermondsey.—Glue, glue pieces, sheep-pelts, sheepfleshings, buffalo cuttings, pickers, tanning materials; oak, cork tree, larch, and mimosa bark; hemlock and chestnut extract; divi-divi, sumac, valonia, cutch, gambier, myrabolanes, sod oil, etc. Leather, glue, and tanning materials. 652
- 9** Green, John, London.—Gelatine for cigar-boxes, printers, engravers, and artificial-flower makers. 652
- 10** Bennett, Thomas, & Son, London.—Goldbeaters' skin. 652
- 11** Puckridge, Fred, & Nephew, London.—Goldbeaters' moulds, goldbeaters' skin for medical purposes. 652
- 12** Wilson, Walker, & Co., Sheepscar Works, Leeds.—Colored fancy leather and glue. 652
- 13** Pullman, Robert & John, London.—Manufactured leather, bleaching composition, leather finishing, stoning, and kniving machines. 652
- 14** Lovey, Edward, Ponsnooth, Cornwall.—Beehives, with samples of honey and wax. 654
- 15** Schneider, Edward Albert, London.—Liquid essence of beef. 656
- 16** Nicoll, Donald, London.—Starch and contents, rendering fabrics and timber uninflammable; tea and coffee combined with milk and sugar, contained in soluble capsules for distribution in single cups; aerated beverages in vessels to allow rapid distribution in single draughts; carbon combined with caoutchouc, for the preservation of wood and iron; preserved food. 656
- 17** Geyelin & Co., London.—Concentrated animal and vegetable food. 656
- 18** Goodall, Backhouse, & Co., Leeds.—Yorkshire relish sauce and orange quinine wine. 656
- 19** Keen, Robinson, Bellville, & Co., London.—Preparations from mustard, barley, oats, etc. 656
- 20** Pratt, James, London.—Sauce. 656
- 21** Smith, T. & H., & Co., Edinburgh.—Essences of coffee and coffee with chicory; flavoring essences, aerated waters, and chemical products. 656
- 22** Jones, Palmer, & Co., London.—Condiments, sauces; baking, custard, and curry powders. 656
- 23** Menier, Emile, London.—Chocolates and cocoas. 656
- 24** Grant, Thomas, The Distillery, Maidstone.—Cherry brandy. 656
- 25** Horn, Thomas Story, Newcastle-on-Tyne.—Preserved fresh meat; improved blocks for masonry. 656
- 26** Ledger, H., & Co., London.—Pure extract of meat. 656
- 27** Ball, James, London.—Sauce. 656
- 28** Lea & Perrins, Worcester.—Sauce. 656
- 29** Corry, William, & Co., Belfast, Ireland.—Aerated waters from Cromac Springs, Belfast; non-metallic valves, plungers, connections, taps, and cylinder-lining. 656

AGRICULTURE.

Animal and Vegetable Products, Tools, Machines.

- Textile Substances of Vegetable or Animal Origin.**
- 30 Allen, Frederick, & Sons, London.—Confectionery and medicated confectionery. 656
- 31 Inman Brothers, Huddersfield, Yorkshire.—Aerated waters. 656
- 32 Bewley & Draper, Dublin.—Aerated waters. 656
- 33 Pachitt, Edwin Cheshire, Nottingham.—Pickles, sauces; anchovy and bloater paste. 656
- 34 Cantrell & Cochran, Dublin.—Ginger ale, aerated beverages, etc. 656
- 35 Fry, Joseph Storrs, & Sons, Bristol.—Chocolate and cocoa, and specimens illustrative of the process of manufacture. 656
- 36 Codd, Hiram, London.—Mineral waters. 656
- 37 Cross & Blackwell, London.—Pickles, sauces, vinegars, jams, jellies, marmalades; potted and preserved meats; preserved fruits, soups, and fish; oils for salads, etc.; preserved provisions, sausages, vegetables, etc. 656
- 38 Powell, Thomas, London.—Self-raising flour; baking-powder. 657
- 39 Hunter, John, & Son, Woodhall Mills, Juniper Green, near Edinburgh.—Oatmeal and pot barley. 657
- 40 Plunkett, John, & Co., Portland Works, Dublin.—Malt for brewing and distilling, and roasted malt for coloring and flavoring porter and ale. 657
- 41 McCann, John, Beaumont Mills, Drogheda.—Oatmeal and groats. 657
- 42 Stevens, Thomas, Wrexham, North Wales.—Ornamental confectionery, birthday and christening cake, meringues, medallions, ornamental sugar-stand; rich cake. 657
- 43 Johnston Still Co. (Limited), Leixlip, near Dublin.—Irish and Scotch whiskies, model and drawings of the Johnston still. 660
- 44 Burke, Edward & John, Dublin.—English ales, Dublin stout, Irish and Scotch whiskies. 660
- 45 Wright, Herbert, & Co., Diamond Brewery, Dover.—Pale ale and stout. 660
- 46 Ind. Coope, & Co., Burton-on-Trent, Staffordshire.—Ale. 660
- 47 Bindley & Co., Burton-on-Trent.—Ales. 660
- 48 Mott & Co., Leicester.—Cowslip wine. 660
- 49 Muir, Jas., & Son, Calton Hill Brewery, Edinburgh.—Ales. 660
- 50 Johnson & Co., Canterbury.—Pale ale. 660
- 51 Pendock Brothers, Bristol.—Cider and Perry. 660
- 52 Richardson, Earp, & Slater.—Trent and Northgate Brewery, Newark-upon-Trent.—Ale. 660
- 53 Maw, Thomas, Leeds.—Pickles, sauces, lozenges, syrups, vinegars, and baking powder. 660
- 54 Gissing, Anthony S., & Sons, Eye, Suffolk.—Fancy biscuits and baking powder. 661
- 55 Dickson, James Hill, & Nephews, Rhea Fibre Works, Godalming, Surrey.—Rhea in every stage; yarn and woven cloth made from the Indian rhea and other fibres; work on flax and hemp. 665
- 56 The Mill Hill Wool and Rag Extracting Co. (limited), Mill Hill Works, Huddersfield.—Wools made from old rags, etc. 667
- 57 Bowes, John L., & Bro., Liverpool.—Raw materials used in the woollen and worsted trade. 667
- 58 Smith, David, & Co. (limited), Kensington Works, Halifax, Yorkshire.—Cleanned wools and wools extracted from waste products. 667
- Machines, Implements, and Processes of Manufacture.**
- 59 Aveling & Porter, Rochester, Kent.—Agricultural locomotive engine, locomotive crane engine, steam road roller, wagons for road locomotive engines. 670
- 60 Wills, Arthur Winkler, Park Mills, Birmingham.—Edge tools. 670
- 61 Munroe, William, Inverness.—Models and drawings of farmsteadings and cottages, ancient Highland cart, and Shetland plow. 670
- 62 Fison, J. P., Teversham Works, Cambridge.—Agricultural machinery: vertical steam engine and boiler, chaff cutter, centrifugal pump, steam threshing-machine and chain harrow, models of portable steam engine, movable hut, centrifugal pump, and furrow plows. 670
- 63 Fussell, James, Sons, & Co., Mell's Iron Works, near Frome, Somersetshire.—Edge tools used in agriculture. 670
- 64 Wilkinson, William, & Sons, Spring Works, Sheffield.—Sheep and garden shears. 672
- 65 Corcoran, Witt, & Co., London.—Burr and peak stones, millstones, mill bills and handles, woven iron wire sieves, etc.; stones for shelling and whitening rice, and corn-weighing apparatus. 673
- 66 Lloyd, T., & Sons, London.—Flour mills, dressing machines, grinding mill, and coffee mills. 673
- 67 Sainty, John, & Barnard, Alpha Machine Works, Wisbeach, Cambridgeshire.—Apparatus for preventing loss of life by water; self-feeding, sucking, drying, and dressing machine; machine for separating grain from seeds. 673
- Agricultural Engineering and Administration.**
- 68 Clark & Dunham, London.—Millstones, chronometers for measuring and weighing grain, and lubricators. 674
- 69 Smith, William, & Sons, Barnard Castle, County Durham.—Street sweeper and road scraper. 682
- 70 Neighbour, G., & Sons, London.—Beehives and bee furniture. 683
- 71 Horn, Thomas Story, Newcastle-on-Tyne.—Improved blocks for masonry. 103
- 72 Ledger, H., & Co., London, Disinfecting fluid. 100
- 73 Goodall, Backhouse, & Co., Leeds.—Baking powder. 100

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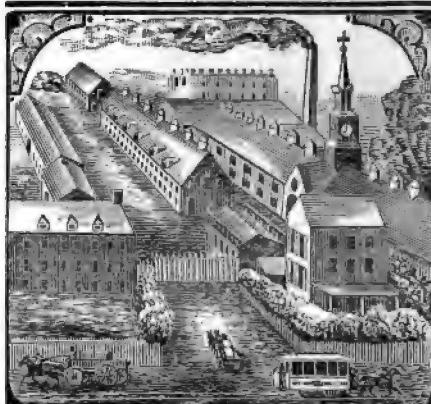
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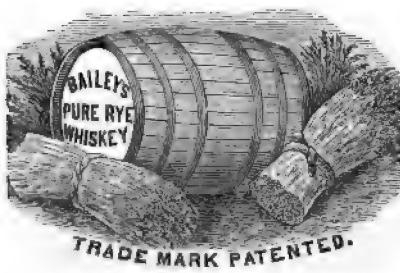
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CANADA.

Forest and Agricultural Products, Animals.

Arboriculture and Forest Products.

- 1 Cusack, H. P., Newbury, Ont.—Black ash hoops. 600
 2 Pike & Richardson, Chatham, Ont.—Barrel hoops. 600
 3 Brennen, M., Hamilton, Ont.—Sash blinds, doors, mouldings. 600
 4 Allen, D. R., Chatham, Ont.—Specimens of wood. 600
 5 Coleman & Goninlock, Seaforth, Ont.—Coiled barrel hoops. 600
 6 Edson, T., Fitch, & Co., New Liverpool, Ont.—Match splints, wood boxes. 600
 7 St. Martin Bobbin Spool Co., St. John, N. B.—Bobbin spools, turning work. 600
 8 Clarke, John, St. John, N. B.—Kegs and barrels. 600
 9 Munroe, D. R., St. John, N. B.—Native woods. 600
 10 Murphy, T. G., Petitcodiac, N. B.—Native woods, cabinet work. 600
 11 G. & G., Hampton, N. B.—Turned work, native woods. 600
 12 Lovejoy, H. L., St. Stephens, N. B.—Samples of fret and jig sawing. 600
 13 George, Daniel F., Fredericton, N. B.—Shingles and clapboards. 600
 14 Wells, A. G., & Co., St. John, N. B.—Hamacattack ship knees. 600
 15 Askew, A., Victoria, Br. Col.—Flag pole. 600
 16 Campbell & Heatty, Victoria, Br. Col.—Spars. 600
 17 Moody & Nelson, Victoria, Br. Col.—Collection of native woods. 600
 18 Morley, Victoria, Br. Col.—Cedar shingles. 600
 19 Dolby, Victoria, Br. Col.—Tan bark, hazel hoops, and hemlock bark for tanning. 600
 20 Hayward & Jenkinson, Victoria, Br. Col.—Mouldings in native woods, resin, abies, douglasii, and Canada balsam. 600

Pomology.

- 21 Fisher, W., Victoria, Br. Col.—Cranberries. 610
 22 Advisory Board, B. C., Victoria, Br. Col.—Models of apples and pears. 610

Agricultural Products.

- 23 Painchaud, C. F., Varennes, Q.—Long marsh grass, paper material. 620
 24 Tolmie, Dr., Victoria, Br. Col.—Cereals on stalk. 620

- 25 Smith, W., Victoria, Br. Col.—Cereals on stalk. 620
 26 Carter, T. W., Victoria, Br. Col.—Cereals on stalk. 620
 27 Brown, R., Victoria, Br. Col.—Cereals. 620
 28 Reid, William, Victoria, Br. Col.—Cereals. 620
 29 Kerr, James, J. Kerr's Ranch, Br. Col.—Timothy grass. 620
 30 Boyd, John, Cold Spring Ranch, Br. Col.—Timothy grass. 620
 31 Fisher, Victoria, Br. Col.—Wheat, oats, etc. 620
 32 Robertson, Wm., Quesnelle, Br. Col.—Oats and wheat in straw. 620
 33 Ricke, L. W., Chilcotin, Br. Col.—Spring wheat. 620
 34 Bunster, A., Victoria, Br. Col.—Barley from Metchosin. 620
 35 Girdlestone, G. H., Windsor, Ont.—Tobacco, cigars, etc. 623
 36 Scalais, Job, Toronto, Ont.—Manufactured tobacco. 623
 37 Lymans, Clare, & Co., Montreal, Q.—Spices. 623
 38 Davis, S., & Co., Montreal, Q.—Cigars. 623
 39 Lordly, Alf., St. John, N. B.—Spices, coffee. 623
 40 Cloake, J., Victoria, Br. Col.—Hops. 623
 41 Wain, H., Victoria, Br. Col.—Hops. 623
 42 Moses, D. T., Victoria, Br. Col.—Hops. 623
 43 Fuller, L. S., Stratford, Ont.—Linseed. 624
 44 Weld, W., London, Ont.—Seeds. 624
 45 Council of Agriculture, Quebec, Q.—Grains. 624
 46 Bertrand, A., St. John, Q.—Pressed hay. 624

Land Animals.

- 47 Mummer, S., & Son, London, Ont.
 a Canadian birds. 635
 b Wild animals. 637
 48 Sands, Joseph, Toronto, Ont.—Birds. 635
 49 Herring, S., Toronto, Ont.—Birds. 635
 50 Morrell, G. F., Hamilton, Ont.—Stuffed birds. 635
 51 Egan, T., Halifax, N. S.
 a Canadian birds. 635
 b Bear and caribou heads. 635

AGRICULTURE.

Animal and Vegetable Products.

52 Attwood, Ab., London, Ont.—Honey extractor and beehive.	638	81 Hivac, Parsons, & Co., Niagara, Ont.—Oak-tanned belting leather.	63
53 Entomological Society, London, Ont.—Canadian insects.	638	82 Hamilton, C., Kingston, Ont.—Spanish sole.	63
Water Animals, Fish-Culture, and Apparatus.			
54 Mummer, S., & Son, London, Ont.—Fishes.	641	83 Lang, Reinhold, Berlin, Ont.—Calfskins.	63
55 Hill, P. C., Halifax, N.S.—Fishes.	641	84 Kelly, Robert, Toronto, Ont.—Leather.	63
56 Robitaille, Th., Quebec, Q.		85 Sischer & Son, Berlin, Ont.—Glue.	63
<i>a</i> Dried cod.	642	86 Warner, Geo. W., Toronto, Ont.—Dyed furs.	63
<i>b</i> Cod and cod-liver oil.	646	87 Wickell, S. R., Brockville, Ont.—Pebbled-grain leather.	63
57 Bain, J. D., Ristigouche, N. B.		88 Mathieu, Léandre, St. Catharines, Ont.—Leathers.	63
<i>a</i> Preserved salmon.	642	89 McCordick, W. H., St. Catharines, Ont.—Saco leather, cut laces.	63
<i>b</i> Preserved lobster.	643	90 Moseley & Ricker, Montreal, Q.—Leathers.	63
58 O'Leary, Henry, Richibucto, N. B.		91 Laframboise & Wiallard, Montreal, Q.—Glue.	63
<i>a</i> Spiced salmon.	642	92 Heath & Northey, Montreal, Q.—Sole leather.	63
<i>b</i> Canned lobster.	643	93 Galibert, C. & Son, Montreal, Q.—"Wax-calf" leathers.	63
59 Noble, R. B., Richibucto, N. B.		94 Dominion Leather-Board Company, Chamby, Q.—Leather-board.	63
<i>a</i> Canned mackerel.	642	95 Rochette, Gaspard, Quebec, Q.—Leathers.	63
<i>b</i> Canned lobsters.	643	96 Richard & Plamondon, Quebec, Q.—Leathers.	63
60 Ewing & Wise, Victoria, Br. Col.		97 Ramsay, A., & Son, Montreal, Q.—Glues.	63
<i>a</i> Holicans, salmon-trout, canned and salt salmon, isinglass.	642	98 Mooney, J. H., Montreal, Q.—Fancy-colored sheepskins.	63
<i>b</i> Canned oysters, oyster and clam shells.	643	99 Roach & Coates, Penobsquis, N. B.—Glue.	63
61 Fisher, W., Victoria, Br. Col.—Smoked salmon.	642	100 Summar, S. W., & Co., Fredericton, N. B.—Patent leather.	63
62 Holbrook & Cunningham, Victoria, Br. Col.—Canned salmon.	642	101 McCausland, Ugham, & Co., Fredericton, N. B.—Patent and enameled leather.	63
63 Deas, J. S., Victoria, Br. Col.—Canned salmon.	642	102 Travis, J., St. John, N. B.—Sole leather.	63
64 Tetu, Dr., Rivière Ouelle, Q.—Delphinoleine.	646	103 Belmont Tanning Co., Victoria, Br. Col.—Skins and leathers.	63
65 Langley, Victoria, Br. Col.—Dogfish and holican oils.	646	104 Boscovitz, Victoria, Br. Col.—Dressed bear and elk skins, leather.	63
66 Muir, M., Looke, Br. Col.—Dogfish oil.	646	105 Gray & Co., Toronto, Ont.—Canned fruits, vegetables, fish.	656
67 Skinner, G. M., Gananoque, Ont.—Trolling-spoon bits, poles, holders.	647	106 Provision Trade of Toronto, Ont.—Canned meats, dried fruits.	656
68 Scribner, D., St. John, N. B.—Salmon and trout rods.	647	107 Canadian Meat Co., Sherbrooke, Q.—Canned meats, jellies, jams, etc.	65
69 Baillie, Charles, St. John, N. B.—Salmon and trout rods, flies.	647	108 N. A. Packing Co., Montreal, Q.—Canned meats, jellies, jams, etc.	656
70 Pitts, D. H., Halifax, N. S.—Fishing-reel.	647	109 Burgess, W., Mimico, Ont.—Horse radish sauce.	656
Animal and Vegetable Products.			
71 Rhodes, Col., Quebec, Q.—Butter, cream cheese.	651	110 Casswell, E., Ingersoll, Ont.—Preserved meats.	656
72 Kipp, J., Chillewhack, Br. Col.—Butter.	651	111 Tache, F., Kamouraska, Q.—Preserved meats.	656
73 Caswell, E., Ingersol, Ont.—Cheese.	651	112 Bain, J. D., Ristigouche, N. B.—Preserved meats.	656
74 Wells, J., & S., Chillewhack, Br. Col.—Cheese.	651	113 Graham, John, Sussex, N. B.—Cured and spiced bacon.	656
75 McLeod, R. E., & Co., Sussex, N. B.—Cheeses.	651	114 Guthrie & Hevener, St. John, N. B.—Jams, etc.	656
76 Advisory Board, Br. Col., Victoria, Br. Col.—Cheese.	651		
77 Wagner, J., & Co., Galt, Ont.—Sheepskins.	652		
78 Creig, W., & Son, Port Hope, Ont.—Sheepskins.	652		
79 Gunn, A., & Co., Kingston, Ont.—Spanish sole leather.	652		
80 Ford & Sons, Kingston, Ont.—Sole and upper leather.	652		

Vegetable Products, Textiles, Implements.

- 115 Belcher, Jas. W., Halifax, N. S.—**
Preserved fruits in sugar. 656
- 116 McDougall, John, Bowmanville,**
Ont.—Flour. 657
- 117 McKay, Thos., & Co., Ottawa, Ont.—**
Oatmeal. 657
- 118 Corn Exchange Association, Toronto,**
Ont.—Grain, flour, meal. 657
- 119 Wilson, James, Fergus, Ont.—**
Oatmeal. 657
- 120 Martin & Sons, Mount Forest, Ont.—**
Oatmeal. 657
- 121 Hogg & Ford, Galt, Ont.—**
Oatmeal. 657
- 122 Willet, R., & Co., Chambly, Q.—**
Oatmeal. 657
- 123 Scott & Co., Highgate, Ont.—**
Oatmeal. 657
- 124 Muirhead & Gray, London, Ont.—**
Oatmeal, pearl barley, split peas. 657
- 125 Aspden & Pritchard, London, Ont.—**
Oatmeal, split peas. 657
- 126 Hilliard, William, Goderich, Ont.—**
White and spring wheat flour. 657
- 127 Charlesworth, M. C., & Son, EDMONDVILLE, Ont.—Flour.** 657
- 128 Watts, N., & Co., Brantford, Ont.—**
Flour. 657
- 129 Jolton, J. G., Ganafraised, Ont.—**
Flour. 657
- 130 Wadsworth, J. P., Meadowf ord, Ont.—**
Flour. 657
- 131 King, J. G., Porthope, Ont.—**
Flour. 657
- 132 Hunt, C. B., & Co., London, Ont.—**
Flour. 657
- 133 Smyth & Smyth, Merritton, Ont.—**
Flour. 657
- 134 Parkyn, James, Montreal, Q.—**
Flours. 657
- 135 Brodie & Harvey, Montreal, Q.—**
Flours. 657
- 136 Millers' Association of Canada, Toronto, Ont.—Flour and meal.** 657
- 137 Weatherstone, W., Toronto, Ont.—**
Flour and meal. 657
- 138 Howland, W. P., & Son, Toronto, Ont.—Flour and grains.** 657
- 139 Ogilvie & Hutchinson, Goderich, Ont.—Spring wheat flour.** 657
- 140 McKay, John, Dundas, Ont.—Pot**
and pearl barley. 657
- 141 Allan, J. U., Picton, Ont.—Garden**
peas. 657
- 142 Mewhart, Joseph, Montreal, Q.—**
Self-raising flour. 657
- 143 Olszewski, S., Montreal, Q.—Barley,**
corn, rice, bean-meal. 657
- 144 Cattelli Bros, Montreal, Q.—**
Potato starch, macaroni, vermicelli, etc. 658
- 145 Spinelli, R., Montreal, Q.—Macaroni,**
vermicelli, etc. 658
- 146 Poulin, F. R. S., La Patrie, Q.—**
Potato starch. 658
- 147 Edwardsburg Starch Co., Edwardsburg, Q.—Laundry and**
corn starch. 658
- 148 Wilson, Charles, Toronto, Ont.—**
Lemonade, ginger ale, etc. 659
- 149 Christin, J., Montreal, Q.—Cider,**
syrups, and soda-water. 659
- 150 Winning, Hill, & Ware, Montreal,**
Q.—Fruit syrups, cordials, etc. 659
- 151 Advisory Board, Quebec, Q.—**
Maple sugar. 659
- 152 Simard, R., L'Assomption, Q.—**
Maple sugar. 659
- 153 Fidèle Perrault, F., L'Assomption,**
Q.—Maple sugar and syrup. 659
- 154 Woodburn, J. R., & Co., St. John,**
N. B.—Confectionery. 659
- 155 O'Keefe & Co., Toronto, Ont.—**
Ale. 660
- 156 Carling & Co., London, Ont.—**
Ale, porter, malt. 660
- 157 Adwell, R., London, Ont.—**
Ale, porter. 660
- 158 Labatt, John, London, Ont.—**
Ale, porter. 660
- 159 Osborne, William, Hamilton, Ont.—**
Malt. 660
- 160 Slater & Springer, Galt, Ont.—**
Malt. 660
- 161 Howard & Northwood, Chatham,**
Ont.—Malt. 660
- 162 Bunster, A., Victoria, Br. Col.—**
Malt from Metchosin barley. 660
- 163 Smith, R., & Co., Fairfield Plain,**
Ont.—Native wines. 660
- 164 Davies, Thomas, & Bro., Toronto,**
Ont.—Ale and porter. 660
- 165 Canada Wine-growers' Association,**
Toronto, Ont.—Canadian wines. 660
- 166 Beaver, Henry, Hamilton, Ont.—**
Red and white wines. 660
- 167 Taylor & Batc, St. Catharines, Ont.—**
Ale, porter, malt. 660
- 168 Waterhouse, Joseph, Chatham,**
Ont.—Ale, porter. 660
- 169 McLeod, McNaughton, & Co.,**
Montreal, Q.—Ale, porter. 660
- 170 Lefebvre, M., Montreal, Q.—**
Vinegar. 660
- 171 Simard, R., L'Assomption, Q.—**
Wine, maple vinegar. 660
- 172 Fiddle Perrault, F., L'Assomption,**
Q.—Wine, maple vinegar. 660
- 173 Boswell, Joseph, Quebec, Q.—**
Beer. 660
- 174 Laforce, Quebec, Q.—Bitters.** 660
- 175 Troop, O. V., & Co., St. John, N. B.—**
Vinegar. 660
- 176 McCormick, T., London, Ont.—**
Confectionery and biscuits. 661
- 177 Christie, Brown, & Co., Toronto,**
Ont.—Biscuits. 661
- 178 Girwin, James, St. Catharines, Ont.—**
Biscuits. 661
- 179 Hulman, J. C., & Co., Hamilton,**
Ont.—Confectionery and biscuits. 661
- 180 Hessin, William, Toronto, Ont.—**
Confectionery and biscuits. 661
- 181 Alexander & Son, Montreal, Q.—**
Confectionery. 661
- 182 Hossack, Woods, & Co., Quebec,**
Q.—Pilot and cabin biscuits. 661
- 183 Viau & Bros., Montreal, Q.—**
Confectionery and biscuits. 661

AGRICULTURE.

Machines and Implements.

184 Rankin, Th., & Sons, St. John,		
N. B.—Biscuits, crackers, etc.	661	
185 Scriver, J. J., Halifax, N. S.—Pilot		
and navy biscuit.	661	
186 Massie & Campbell, Guelph, Ont.		
—Confectionery and biscuits.	661	
187 Turcotte, Quebec, Q.—Linseed		
oil.	662	
Textile Substances of Vegetable or		
Animal Origin.		
188 Nichol, R., & Ruth, Belmont, Ont.		
—Manufactured Scotch flax.	666	
189 Fuller, S. S., Stratford, Ont.—		
Dressed flax.	666	
190 Harrison, D. H., St. Marys, Ont.		
Dressed flax.	666	
191 Davis, J. H., & Co., Hamilton, Ont.		
—Samples of Canadian wools.	667	
192 Taylor, Th. H., Chatham, Ont.—		
Fleeces of combing-wool.	667	
193 Harris, John, & Co., Hamilton, Ont.		
—Canadian wools.	667	
194 Long & Bisby, Hamilton, Ont.—		
Canadian wools.	667	
195 Stahlschmidt, Victoria, Br. Col.—		
Island and mainland wool.	667	
196 Pecover, Joseph, Hamilton, Ont.—		
Hair, upholstery, etc.	669	
Machines, Implements, and Processes		
of Manufacture.		
197 Duperow, Ch., Stratford, Ont.—		
Harrow.	670	
198 Powell, W., Belleville, Ont.—Harrow		
and cultivator.	670	
199 Ross, George, Chatham, Ont.—		
Plows.	670	
200 Spardle, Th., Stratford, Ont.—		
Plows.	670	
201 Oshawa Manufacturing Co., Oshawa, Ont.—Scythes, forks, hoes, rakes,		
etc.	670	
202 Merrill, Abel, Chatham, Ont.—Cultivator or gang-plow.		
670		
203 Walton, B. W., Fergus Well, Ont.—		
Gang-plow, double furrow, etc.	670	
204 Stratchan, D. K., Goderich, Ont.—		
Cultivator.	670	
205 Stratchan, A. S., Goderich, Ont.—		
Iron harrows.	670	
206 McDonald, A. S., Osgood, Ont.—		
Cultivator.	670	
207 Gillies, George, Gananoque, Ont.—		
Harrow, cultivator, horse-hoe.	670	
208 Munro & Hagens, Seaforth, Ont.—		
Iron plows.	670	
209 Mathieson, S., Tavistock, Ont.—		
Iron plows.	670	
210 Wilson, W., Strathroy, Ont.—Com-		
bined harrow and hay-rake.	670	
211 Wilkinson, G., Aurora, Ont.—Dou-		
ble furrow, iron, and gang-plow.	670	
212 Lowerie, J., Sarnia, Ont.—Plows.		
670		
213 McGarvin, M., Chatham, Ont.—		
Rotary harrows.	670	
214 Morely, G., Thorould, Ont.—		
Plows.	670	
215 Watson, John, Ayer, Ont.—Gang,		
swing, and subsoil plows.	670	
216 Elliot, John, London, Ont.—		
Plow.	670	
217 Gibbs & Coursolles, Ottawa, Ont.—		
Revolving drag-harrow.	670	
218 Jones, D. F., & Co., Gananoque, Ont.—		
Shovels, hoes, forks.	670	
219 Snyder, E., Acton, Ont.—Single		
frame iron plow.	670	
220 Richardson, Th., Fergus, Ont.—		
Gang-plow.	670	
221 Sparling, W., Parkhill, Ont.—		
Champion sod-plow.	670	
222 Colton, N. P., Gananoque, Ont.—		
Iron harrow, cultivators.	670	
223 Bell, C. R., Parkhill, Ont.—Steel		
garden-plow.	670	
224 Stephens, P. E., Owen Sound, Ont.—		
Ditching-spade.	670	
225 Carrier, L'Aine, & Co., Quebec, Q.—		
Agricultural implements.	670	
226 Baillargeon, E., New Liverpool, Q.—		
Spades and shovels.	670	
227 Jeffrey, James, Montreal, Q.—Plow,		
double mould-board, cultivator, etc.	670	
228 Smith, Th., Aylmer, Q.—Cultiva-		
tor.	670	
229 Gibbs & Coursolle, Ottawa, Ont.—		
Snow-plow.	670	
230 Sands, Joseph, Forest, Ont.—Bag-		
filling machine.	670	
231 Harris, J., & Co., St. John, N. B.—		
a Plow.	670	
b Mower, horse-rake, potato-digger.	672	
c Thrasher and horse-power.	673	
d Hay-cutter.	674	
232 Willet, D., St. John, N. B.—Culti-		
vator, seed harrow.	670	
233 Rummel, C. B., Moncton, N. B.—		
Plows.	670	
234 Holland, J., Belleville, Ont.—Land		
roller and sover combined.	671	
235 Ayr, John Watson, Ayr, Ont.—		
Grain-drill, seed-sower.	671	
236 Vessot, J. & S. Joliette, Q.—Sow-		
er, harrow, and roller combined.	671	
237 Cameron, A., Colborne, Ont.—		
Horse-rake.	672	
238 McCallum, J. Kars, Ont.—Potato-		
digger.	672	
239 Sawyer, L. D., & Co., Hamilton,		
Ont.—Iron-clad mower.	672	
240 Johnston, Leslie, London, Ont.—		
Pea-harvester attachment.	672	
241 Crawford & Co., London, Ont.—		
Combined reaper and mower.	672	
242 Bawtinheimer, P. M., Clifton, Ont.—		
Potato-digger.	672	
243 Martin, Stephen, Kars, Ont.—Po-		
tato-digger.	672	
244 Eliot, Th., Peterboro, Ont.—Com-		
bined hay-rake and loader.	672	
245 Bartlet, Ed., Renfrew, Ont.—Po-		
tato-digger.	672	
246 Harris, A., Son, & Co., Brantford,		
Ont.—Combined mower and reaper,	672	
mower.	672	
247 Green Bros. & Co., Waterford, Ont.		
Reaper.	672	

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20.	Whooping-Cough, Spasmodic Cough	50
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22.	Ear Discharges, Hardness of Hearing	50
23.	Scrofula, Swellings and Ulcers	50
24.	General Debility, or Physical Weakness	50
25.	Dropsy, Fluid Accumulations	50
26.	Sea-Sickness, Nausea, Vomiting	50
27.	Urinary Diseases, Gravel, Renal Calculi	50
28.	Nervous Debility, Seminal Weakness	50
29.	Sore Mouth, or Canker	50
30.	Urinary Incontinence, Wetting the Bed	50
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free on receipt of the price.

Machines, Implements, Engineering.

248 Patten Manufacturing Co., Whitby, Ont.—Reapers.	672	274 Woodbridge Agricultural Works, Woodbridge, Ont.	
249 Elliot, John, London, Ont.—Reaper and mower.	672	<i>a</i> Thrasher and separator. 673 <i>b</i> Portable steam-engine. 674	
250 Massey Manufacturing Co., Newcastle, Ont.		275 Haggart & Bros., Brampton, Ont.	
<i>a</i> Mowers, reaper, self-raker, horse-rake. 672		<i>a</i> Horse-power thrasher, truck, duster, separator, etc. 673 <i>b</i> Chaff-cutter with carrier. 674	
<i>b</i> Straw-cutter, grain-crusher. 674			
251 Dennis, Rowland, London, Ont.—Potato-digger and mould-boards.	672	276 Armstrong, Ed., Portland, N. B.—Fanning-mill.	673
252 Brown, G., & J., Belleville, Ont.—Mower.	672	277 Maxwell, David, Paris, Ont.—Straw and root cutters.	674
253 Grant, Peter, Clinton, Ont.—Hay-fork and tackle.	672	278 Elliot, John, London, Ont.—Straw-cutter.	674
254 Head, Thomas, Capetown, Ont.—Potato-digger.	672	279 Pratt, Charles, London, Ont.—Milk-pan.	675
255 Wilson & Piper, Strathroy, Ont.—Sulky arrow and hay-rake.	672	280 Tomlinson, J., Goderich, Ont.—Cheese-box.	675
256 Sherman & Foster, Strathford, Ont.—Combined mower and reaper.	672	281 Clarke, B. W., Downsview, Ont.—Cheese-press, cider, and shingles.	675
257 Forsyth & Co., Dundas, Ont.—Combined reaper and mower.	672	282 McKelvey, James, St. Catharines, Ont.—Cream-gatherers; refrigerator.	675
258 Gray, A. G., St. John, N. B.—Mowing-machine.	672	283 Ashley & Hazard, Belleville, Ont.—Gang cheese-press.	675
259 Dutcher, C. W., Sussex, N. B.—Model of potato-digger.	672	284 Cable, Bayard, & Co., Montreal, Q.—Churn.	675
260 McFarlane, P., & Sons, Douglas, N. B.—Horse hay-rake.	672	285 Pitts, D. H., Halifax, N. S.—Cheese hoops, churn.	675
261 McFarlane, Thom, & Ander, Fredericton, N. B.—Mowers.	672	286 Advisory Board, British Columbia, Victoria, Br. Col.—Butter.	675
262 Bennett, James, St. John, N. B.—Model of potato-digger.	672		
263 Gibbs & Coursolle, Ottawa, Ont.—Mechanical sheep-shearer.	673	Agricultural Engineering and Administration.	
264 Luke & Jolton Bros., Guelph, Ont.—<i>a</i> Pea-thresher.	673	287 Strong, J. E., Newton Brook, Ont.—Entrance-gate and models.	680
<i>b</i> Steam-cutter and chaff-carrier. 674			
265 Watson, John, Ayer, Ont.—<i>a</i> Horse-rake.	673		
<i>b</i> Straw and root cutters, grain-choppers, corn-shellers. 674			
266 Barthell, L., & Co., Stratford, Ont.—Farming-mill.	673	288 Stevens, R. E., Owen Sound, Ont.—Combination gate and models.	680
267 Armstrong, G. F., & Bros., Goderich, Ont.—Farming-mill.	673		
268 Bennet, John, Belleville, Ont.—Farming-mill, separator grader.	673	289 Gruming, B., & Co., Hamilton, Ont.—<i>a</i> Wire fencing.	680
269 Bricker, J. G., Waterloo, Ont.—Thrashers and separators.	673	<i>b</i> Heavy team harness. 682	
270 Champion, A., Aurora, Ont.—Steam thrasher and boiler.	673		
271 Sherman & Foster, Stratford, Ont.—Thrasher, horse-plow.	673	290 Stephens, R. E., Owen Sound, Ont.—Farm-post with section of fence.	680
272 Wilson, Thomas, Richmond Hill, Ont.—Fanning-mill and separator.	673		
273 Eastwood & Co., Ingersoll, Ont.—<i>a</i> Thrasher and separator.	673	291 Cowan, Alex., Brockville, Ont.—Superphosphate materials.	681
<i>b</i> Portable boiler and engine. 674			
		292 Marcou, W. H., Guelph, Ont.—Superphosphate, bone-dust, etc.	681
		293 Povat, John Sumpter, Markham Village, Ont.—Artificial manure.	681
		294 Robitaille, Théodore, Quebec, Q.—Fish and sea-weed manure.	681
		295 Digby, George, Markham, Ont.—Heavy team harness.	682
		296 Dod, W. H., Doncaster, Ont.—Improved hen's-nest.	683
		297 Cornell, S., Widden Station, Ont.—Model of beehive.	683

FRANCE.

(West of Nave, Columns 3 to 7.)

Metallurgy, Mining Engineering, Agricultural Products.

Minerals, Ores, Stone, Mining Products.

- 1 Laroche, A., Saulxures, Vosges.—Coal. 101
- 2 Asphalt Mining Co., Pyramont-Seys-sel, Ain.—Asphaltum. 101
- 3 Biron & Son, Paris.—Stone staircase and samples of colored Echaillon stone. 102
- 4 Cornu, Eugéne, & Co., Paris.—Marble and Algerian onyx. 102
- 5 Marga, Eugene, Paris.—Samples of marble. 102
- 6 Parfonly & Lemaire, Paris.—Marble for furniture. 102
- 7 Pont-Ollion, Nicolet, Grenoble, Isere.—Cements. 103
- 8 Thorrand & Co., Grenoble.—Cement. 103
- 9 Soullier & Brunot, Teil, Ardèche.—Hydraulic lime. 103
- 10 Lime, Cement, and Plaster Manufacturing Co., Paris.—Limes, cements, plasters, and bricks. 103
- 11 Hydraulic Lime Stock Co., Monté-limare, Drôme.—Lime, cement, and artificial paving blocks. 103
- 12 Holl, Samuel J., Dieppe, Seine-Inferieure.—Chalk. 103
- 13 Pinson, Paris.—Shell, ivory, mother of pearl, and artificial stone. 103
- 14 Pavin de la Farge, L. & E., Viviers, Ardèche.—Hydraulic lime and Portland cement. 103
- 15 Louquéty & Co., Boulogne-sur-Mer.—Cements. 103
- 16 Lauzun & Co., Bourg St. Andeol, Ardèche.—Artificial stone pavement, mosaics, granite, and artificial marble. 103
- 17 Maillert & Mathelin, Chatillon-sur-Seine, Côte d'Or.—Moulding sand for foundries. 104
- 18 Deplanque, jr., Maisons, Alfort, Seine.—Emery in grains and powder. 106
- 19 Roger, Son, & Co., La Ferté-sous-Jouarre, Seine and Marne.—Millstones. 106
- 20 Flaqueux, A., La Ferté-sous-Jouarre, Seine and Marne.—Millstones. 106
- 21 Lithographic Stone Quarry Co., Paris.—Lithographic stone. 106
- 22 Clément, Clément, & Co., Paris.—Diamonds. 106
- 23 Durraschmidt, Lyons.—Emery in grains and powdered. 106
- 24 Bertrand, Jules, & Co., La Ferté-sous-Jouarre, Seine and Marne.—Millstones. 106

25 Bailly & Co., La Ferté-sous-Jouarre, Seine and Marne.—Millstones. 106

- 26 Weyl & Co., Paris.—Mineral water from Aulus Springs. 107

Metallurgical Products.

- 27 Desmoutis, Quennessen, & Le Brun, Paris.—Platinum. 108
- 28 Chappée, A., Mans, Sarthe.—Iron pipes for water and gas. 108
- 29 Durenne, A., Paris.—Monumental fountain. 108
- 30 Martin, Pierre Emile, Sireuil, Charente.—Iron and steel. 111
- 31 La Voulte & Besseges, Lyons.—Iron and steel castings. 111
- 32 Marseilles Gas Co., Marseilles.—Speigleisen iron. 111
- 33 Marquise Foundry and Construction Works, Paris.—Iron pipes and chandeliers. 111
- 34 Secrétan, E., Paris.—Copper. 112
- 35 Brot, Leopold, Paris.—Mirrors, with gilt frames; mirrors and furniture, with double shutters and triple front. 119

Mining Engineering.

- 36 Davey, Bickford, Watson, & Co., Rouen.—Safety fuse for mines. 120
- 37 Cossett, Dubrulle, Lille, Nord.—Safety lamps for miners. 120
- 38 Galibert, A., Paris.—Apparatus for breathing amid suffocating gases. 120

Agriculture and Forest Products.

- 1 Delmas, Augustin, Toulouse.—Natural woods. 600
- 2 Gouturon, Mezin, Lot-and-Garonne.—Corks. 600

Pomology.

- 3 Charaozé Bros., La Pyramide, Maine-and-Loire.—Fruits. 610

Agricultural Products.

- 4 Barthe, G., Paris.—Corn and flour. 620
- 5 Dumoutier, Ch., Claville, Eure.—Agricultural products. 620
- 6 Thoreau, E., & Son, Chateau de la Chèze, Maine-and-Loire.—Barley. 620
- 7 Gutmann & Bloch, Paris.
a Barley. 620
- b Hops and malt. 623
- 8 Pos, Miss J., Paris.—Medicated cigarettes. 623

Animal and Vegetable Products.

Water Animals, Fish Culture, and Apparatus.

9 Colin, Jr., Nantes.—Preserved fish. 641

10 Dupland, E., Ville-en-Bois, Loire-Inferieure.—Preserved sardines. 641

11 Jacquier & Saupiquet, Nantes.—Sardines in oil. 641

12 Maille & Tandeu, Paris.—Anchovies in oil. 641

13 Maré, C., Nantes.—Sardines. 641

14 Peltier & Paillard, Paris.—Sardines in oil. 641

15 Philippe & Co., Nantes.—Sardines in oil. 641

16 Terrien, Palais, Belle-Ile-en-Mer.—Sardines in oil. 641

17 Caillebotte & Dumagnou, Paris.—Sardines and pickled fish. 642

18 Dufour, A., & Co., Bordeaux.—Sardines. 642

19 Peltier & Gaillard, Paris.—Sardines in oil. 642

20 Clement & Co., Paris.—Pearls. 645

Animal and Vegetable Products.

21 Coupic, E., Roquefort Cheese-Factory, Roquefort, Aveyron.—Cheese. 651

22 Bageau, H., Paris.—Waterproof glue for leather. 652

23 Corbel, Eug., & Co., Nantes.—Leather. 652

24 Clavé, Bertrand, Coulommiers, Seine-and-Marne.—Leather. 652

25 Burel, J., Paris.—Peltrey; kid-skins. 652

26 Bayvet Bros., Paris.—Morocco, sheep, calf, goat, and kid skins. 652

27 Bassat & Co., Paris.—Kid for shoes. 652

28 Allain, Jules, Paris.—Kid for shoes. 652

29 Leven, M., senior and junior, Paris.—Calf-skin. 652

30 Fortier, Beaulieu, Paris.—Leather for furniture. 652

31 Tréfousse & Co., Chaumont, Haute-Marne.—Leather and dyes for leather. 652

32 Sueur, F., jr., Paris.—Leather. 652

33 Sorro Bros., Millan, Aveyron.—Calf-skin. 652

34 COLLECTIVE EXHIBIT OF THE LEATHER MANUFACTURERS OF SAINT-SAEMS, SHIRE INFERIEURE.—LEATHER. 652

Lefebvre, Felix.

Lecourtois, Arthur.

Lemonnier, Jules.

Sergent, Edmond.

Fache-Have & Brother.

Frigot, Emile.

Lefebvre, Florentin.

Binet, Hippolyte.

Lenormand, Emile.

Morisset, Mrs.

Blot, Eugène.

Dumesnil, Paul.

35 Revillon Bros., Paris.—Peitries. 652

36 Daubin & Co., Paris.—Pork grease. 652

37 Duchesne Bros., Paris.—Morocco leather. 652

38 Peltier & Gaillard, Paris.—Preserved meats. 656

39 Passion, Marc, Paris.—Preserved food. 656

40 Ségur & Obier, Périgueux, Dordogne.—Preserved food and paté de foie gras. 656

41 Vicat, J. H., Paris.—Mustard and pickles. 656

42 Terrien, senior, Palais, Belle-Ile-en-Mer.—Preserved food. 656

43 Maré, C., Nantes.—Green peas. 656

44 Lenoir, A., Paris.—Preserved game, poultry, etc.; pâtés. 656

45 Lecourt, Francois, Paris.—Preserved food. 656

46 Landrin, Augustin, Paris.—Preserved fruits and vegetables. 656

47 Lamarche & Veillon, Paris.—Preserved game and patés de foie gras. 656

48 Jacquier & Taupiquet, Nantes.—Preserved food. 656

49 Henry, Louis, Paris.—Patés de foie gras. 656

50 Grout, Jr., Paris.—Conserves. 656

51 Tivoli, Auguste, Toulouse.—Paté de foie gras. 656

52 Fau, J., Bordeaux.—Prunes. 656

53 Escoffier, J., Nice.—Preserved fruits. 656

54 Dupland, E., Ville-en-Bois, near Nantes.—Sardines in oil. 656

55 Dronne, L. F., Paris.—Paté de foie gras and preserved meats. 656

56 Dione, A. C., Paris.—Preserved food. 656

57 Lamarche & Veillon, Paris.—Paté de foie gras. 656

58 Deriviere, Julien, Paris.—Preserved food. 656

59 Dardelle & Co., Paris.—Preserved and dried vegetables. 656

60 Cormier & Véron, Paris.—Preserved food. 656

61 Colin, Joseph, Nantes.—Preserved food. 656

62 Chevallier, Appert, Paris.—Preserved food. 656

63 Caillebotte & Dumagnou, Paris.—Preserves. 656

64 Boyer, P., & Co., Gignac, Hérault.—Truffles, capers, and olives. 656

65 Bornibus, Alexandre, Paris.—Mustard and pickles. 656

66 Bonfils Bros. & Co., Paris.—Preserved truffles. 656

67 Philippe & Co., Nantes.—Preserved food. 656

68 Fiton & Nouvialle, Bordeaux.—
a Preserved food and fruits. 656
b Liquors. 660

AGRICULTURE.

Vegetable Products, Wines, Liquors.

69	Ecorcheville & Legrand, Paris.	
a	Preserved fruits.	656
b	Confectionery.	661
70	Dufour, A., & Co., Bordeaux.	
a	Prunes.	656
b	Wines.	660
71	Dandicole & Gaudin, Bordeaux.	
a	Preserved food.	656
b	Wines and liquors.	660
72	Rousseau Bros., Paris.	
a	Preserved fruits.	656
b	Liquors.	660
73	Maille & Tandeau, Paris.	
a	Mustard, pickles, and anchovies in oil.	656
b	Vinegar.	660
74	Lessage & Paignard, Paris.	
a	Preserves.	656
b	Confectionery.	661
75	Louis Bros. & Co., Bordeaux.	
a	Preserves and mustard.	656
b	Vinegar.	660
c	Chocolates.	661
76	Mauprizez, A., Paris.—Tapioca.	658
77	Say, C., Paris.—Refined Sugar.	659
78	Déjardin, E., Paris.—Orange syrup.	659
79	Antheaume & Sons, Bourget-les-Paris, Seine.	
a	Glucose.	659
b	Caramels.	661
80	Lefèvre & Rémondet, Savigny-les-Beaune, Côte d'Or.—Sparkling wines.	660
81	Combier, J., Saumur, Maine-and-Loire.—Liquors.	660
82	Chenu, Laffitte, & Co., Bordeaux.—Wines.	660
83	Bizard & Roger, Bordeaux.—Liquors.	660
84	Passier, A., Sautenay, Côte d'Or.—Wines.	660
85	Otard, Dupuy, & Co., Cognac.—Brandies.	660
86	Pinet, Castillon, & Co., Cognac.—Brandies.	660
87	Perrier, J., & Co., Chalons-sur-Marne.—Champagne wines.	660
88	Montigny de, & Co., Reims.—Champagne wines	660
89	Montheuil, Franc, senior, Bordeaux.—Wines.	660
90	Montebello, Alfred de, & Co., Mareuil-sur-Ây, Marne.—Champagne wines.	660
91	Meukow, A. C., Cognac.—Brandies.	660
92	Merman, G., Bordeaux.—Wines.	660
93	Merman & Maitre, Bordeaux.—Wines.	660
94	Merman, Jules, & Co., Bordeaux.—Wines.	660
95	Mayer, Albert, Paris.—Liquors.	660
96	Mercier Eug Epernay.—Champagne wines.	660
97	Reignard, Paris.—Wines.	660
98	Promis, Justin, Bordeaux.—Wines and brandies.	660
99	Poligny Society of Agriculture, Science, and Art, Poligny, Jura.—Wines.	660
100	Poitevin, Ch., & Co., Bordeaux.—Wines.	660
101	Rouillé, E., Bordeaux.—Wines.	660
102	Rojat, Jules, Nîmes, Gard.—White wine vinegar.	660
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104	Rivière, Gardrat, & Co., Cognac.—Brandies.	660
105	Ricaumont, de, & Co., Libourne.—Wines.	660
106	Sabatier-Granier & Son, Manduel, Gard.—Wines and brandies.	660
107	Rouyer, Guillet, & Co., Saintes, Charente Inferieur.—Brandies.	660
108	Roussillion, J., & Co., Epernay, Marne.—Champagne wines.	660
109	Fontaine, Sarget de la, Bordeaux.—Wines.	660
110	Soudée, Paris.—Wines and Brandies.	660
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112	Marchand Bros., Paris.—Liquors.	660
113	Lossy & Co., Reims.—Champagne wines.	660
114	Lentilhac, de, Ballargeaux, St. Aulaye.—Wines.	660
115	Launay, de, & Co., Paris.—Champagne wines.	660
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117	Lamart, A., Beaumetz-les-Loges, Pas-de-Calais.—Liquors.	660
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119	Javerzac, Viremonday, & Co., Pont-de-Bordes, Lot-and-Garonne.—Wines and brandies.	660
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122	Guichard-Potheret, & Son, Chalon-sur-Saône.—Wines.	660
123	Hivert, Pellevoisin, & Godet, La Rochelle.—Brandies.	660
124	Anthoine, Paris.—Wines.	660
125	Barral, J. L., Paris.—Wines.	660
126	Beaucourt, Fortuné, Margaux-Médoc, Gironde.—Wines.	660
127	Bellot, Jules, & Co., Cognac, Charente.—Brandy.	660
128	Beuverand, de, & Poligny, de, Chassagne, Côte d'Or.—Wines.	660
129	Bollinger, J., Ay-Champagne, Marne.—Champagne wine.	660
130	Bontou, r., Bordeaux.—Wines.	660
131	Boulle, E. Bordeaux.—Wines.	660
132	Bourgoin-Jamain, jr., Beaune, Côte d'Or.—Wines.	660
133	Boutelleau & Co., Barbesieux near Cognac.—Brandies.	660
134	Brugalières, Etienne, Floressas, Lot.—Wines.	660
135	Chaboseau & Payen, Levallois-Perret, Seine.—Liquor.	660

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138	Clavelle, Jules, Bordeaux.—Wines.	660
139	Clerc, J. B., Bordeaux.—Wines.	660
140	Collin, Ad., Chalons-sur-Marne.—Champagne wines.	660
141	Coudert, G., & Son, Limoges, Haute-Vienne.—Brandies.	660
142	Cuniffre, Dobson, & Co., Bordeaux.—Wines.	660
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144	Cusenier, E., & Co., Ornans, near Pontarlier.—Liquors.	660
145	Deliry & Doistau, jr., Pantin, Seine.—Liquors.	660
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152	Gerin, E., Saint Jean d'Angéley, Charente.—Brandy.	660
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158	Fournier, A., Chateau de Figeac, Gironde.—Wines.	660
159	Fouchez, L., & Co., Cognac.—Brandies and liquors.	660
160	Dessandier, F & Co., Jarnac-Cognac.—Brandies.	660
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170	Faure, J., & Co., Cognac.—Brandies.	660
171	Faurie, J., sr., Narbonne.—Wines.	660
172	Ferret, Bros., & Co., Macon.—Wines.	660
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175	Seignouret Bros., Bordeaux.— a Wines and brandies. & Olive oil	660 662
176	Mestrezat & Co., Bordeaux.— a Wines and brandies. & Olive oil.	660 662
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182	Nègre, Joseph, Grasse, Alpes Mar-times.—Confectionery.	661
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189	Arlès, Dufour, Lyons.—Raw silk.	668
190	Thomas, F., Pont des Charettes, Gard.—Cocoons and raw silk.	668
191	Pellet, A. P., St. Jean-du-Gard, Gard.—Raw silk.	668
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192	Rabache, A., Clunay-sur-Odon, Calvados.—Double plow.	670
193	Couture, Paris.—Stripping ma-chines for textiles.	673
194	Druelle, Reims.—Corking appa-ratus for champagne wines.	673
195	Deny, Louis, Paris.—Cylinder press for sugar.	673
196	Maurice & Guenin, Epernay.—Corking machines.	673
197	Mabille Bros., Amboise, Indre and Loire.—Wine and oil presses.	673
198	Logette, Ay, Marne. Clasps for bottles, and machines for using them.	673
199	Gervais, E., Bordeaux.—Corking machines.	673
200	Frisé, Epernay, Marne.—Machines for filling bottles.	673
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35 Fendel, H. J., Lorch.		90 Meuschel, senior, J. W., Buchbrunn.
36 Jung, Joh. Ant., Assmannshausen.		91 Valckenberg, P. J., Worms.
37 Bruck, Erwin, Assmannshausen.		92 Langenbach, J., & Sons, Worms.
38 Grun, Wilh., Assmannshausen.		93 Bach, A. H., Mayence.
39 Kerber, Pet. Jos., Assmannshausen.		94 Henkell & Co., Mayence.
40 Aumuller, Jac., Rudesheim.		95 Dreydelsohn & Co., Mayence.
41 Brandmuller, J. B., Rudesheim.		96 Jäger & Son, Büdesheim.
42 Corvers, Ph., Rudesheim.		97 Meyer & Coblenz, Bingen.
43 Dietrich & Co., Rudesheim.		98 Orb & Weiss, Westhofen.
44 Dilthey, Sahl, & Co., Rudesheim.		99 Herbst, J., Sulzburg.
45 Ehrhardt, C., Rudesheim.		100 Durlacher, S., & Sons, Kippenheim.
46 Ehrhardt, J., Rudesheim.		101 Schutt, A., Bühl.
47 Gebürsch, Widow, Rudesheim.		102 Rossler, A., Neuweier.
48 Hey, Carl, Rudesheim.		103 Wenk, M., Offenburg.
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63 v. Cunibert, Frh., Oestrich.		660
64 Peez, Ernst, Oestrich.		111 Brumby, G., Luckau.—Liqueurs.
65 Rasch, Oestrich.		660
66 Steinheimer, C. J. B., Oestrich.		112 Dammann, L., & Cordes, Thorn.—Liqueurs.
67 Söhnchen, Hallgarten.		660
68 Krämer & Lauer, Eltville.		113 Hoffmann, M. & J., Pfalzburg.—Liqueurs.
69 Nilkens, A., Eltville.		660
70 Preusel & Bachmann, Eltville.		114 Kadach, J., Berlin.—Liqueurs.
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73 V. Kindlinger, Neudorf.		660
74 König, J. B., Rauenthal.		116 Landauer & Macholl, Heilbronn.—Liqueurs.
75 Siegfried, Rauenthal.		660
76 Rosenstein, B., Wiesbaden.		117 Stein, G. & L., Offenburg.—Liqueurs.
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		120 Drouven, Jac., & Co., Coblenz.—Liqueurs, arrack punch-syrup.
		660
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		660
		122 Lehment, Fr., & Co., Kiel.—Liqueurs and spirits.
		660
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		660

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- 3 Schwinner, George, Maissau.**—Saf-fron.

Pomology.

- 4 Von Zierotin, Countess Gabriel, Bl'uda, Moravia.**—Gooseberry and currant bushes, two different fruits growing on the same stem.

- 5 Faseth & Son, F., Gumpoldskirchen, near Vienna.**—Fresh grapes.

- 6 Marks & Weyden, Budapest.**—Turkish prunes.

Agricultural Products.

- 7 Lyka, Demeter, Pázmánd, Hungary.**—Wheat.
- 8 Sosnitzky & Mittler, Brunn.**—Pulses.
- 9 Gogl, Junior, Zeno, Krems.**—Mus-tard.
- 10 Chleborad, Franz, Ladislav, Mar-iditz.**—Hops.

THE SUN NEWSPAPER

Is printed and published every day in the year, at 166, 168, and 170 Nassau Street, New York City. Its regular edition on secular days now (April, 1876) averages about 140,000; its weekly edition over 88,000; and its Sunday issue is nearly 100,000. It thus prints and sells more than a million copies a week, which are read all over the United States. This is a circulation unprecedented in American journalism, and it is constantly on the increase. In proof of this, let the following figures testify. They show the number of copies of THE SUN printed every week during the year ending March 11, 1876.

WEEK ENDING	COPIES PRINTED.	WEEK ENDING	COPIES PRINTED.
March 20.....	849,382	September 18.....	860,858
27.....	845,802	25.....	858,778
April 3.....	857,956	October 2.....	863,985
10.....	868,556	9.....	870,820
17.....	865,076	16.....	878,082
24.....	858,270	23.....	874,625
May 1.....	869,642	30.....	876,160
8.....	867,550	November 6.....	908,580
15.....	877,450	13.....	852,872
22.....	874,946	20.....	847,815
29.....	866,276	27.....	886,248
June 5.....	873,782	December 4.....	845,378
12.....	869,769	11.....	1,042,716
19.....	880,348	18.....	956,294
26.....	888,846	25.....	988,864
July 3.....	898,862	January 1.....	988,987
10.....	867,574	8.....	952,202
17.....	877,400	15.....	953,019
24.....	876,282	22.....	969,911
31.....	874,216	29.....	967,850
August 7.....	865,558	February 5.....	998,080
14.....	875,982	12.....	1,024,647
21.....	880,488	19.....	1,027,209
28.....	870,502	26.....	1,014,766
September 4.....	872,211	March 4.....	1,014,993
11.....	860,755	11.....	1,028,951
TOTAL.....			46,799,769

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11	Chiozza, Luigi, Cervignano, near Trieste.—Maize products.	623	31	Schmitt, Franz, Rehberg, near Krems.—Leather.	652
12	Tanzer Bros., Prague.—Hops.	623	32	Schmalzl, George, Gaudenzdorf, near Vienna.—Leather, skins.	652
13	Schwarz & Sons, Benjamin, Auscha, Bohemia.—Hops.	623	33	Nenner, Christof, Klagenfurt and Trieste.—Leather.	652
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20	Ielinek, Adolph, Lieben, Bohemia.—Glove leather.	652	43	Nachtmann, Jacob, Tannwald.—Raspberry syrup.	659
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22	Ianesch, Edward, Klagenfurt, Karnthen.—Leather.	652	45	Auchmann, F., Marburg, Styria.—Champagne.	660
23	Hoffman, I. and S., Klagenfurt, Karnthen.—Leather.	652	46	Archleb, Josef, The Farms, Kvasnici.—Liquor.	660
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25	Eckstein, H. M., Lieben.—Glove leather.	652	48	Magazzin, Matteo, Zara.—Liquors.	660
26	Cernstein, Anton V., Pardubitz, Bohemia.—Cow leather and calf skin.	652	49	Luxardo, Girolamo, Zara, Dalmatia.—Liquors.	660
27	Breuer, Miromil, Elbeteintz, Bohemia.—Patent leather.	652	50	Radon, Karl, Leitmeritz, Bohemia.—Beer, malt.	660
28	Winter, F., Altmannsdorf, near Vienna.—Hides.	652	51	Lord & Co., F., Vienna.—Liquor.	660
29	Weiss, Bernhard, Vienna.—Cow-hides, lamb, goat, and sheep skins.	652	52	Stampalia, Tommaso, Zara.—Liquors and cordials.	660
30	Suesz, A. H., Vienna.—Leather.	652	53	Siebenbürgen Wine Association, Klausenburg.—Wines.	660

SWITZERLAND.

Agricultural, Animal, Vegetable Products.

Agricultural Products.

1	Anastasio, Giuseppe, Lugano, Ct. Tessin.—Cigars.	623	5	Hürlimann, J. J., Rapperswil, Ct. St. Gallen.—Swiss honey.	654
2	Kottmann, J., Solothurn.—Cigars.	623	6	Society for Bee Culture, Lukmanier, Sobrio, Ct. Tessin.—Honey and wax.	654
3	Sauter, A., Diessenhoffen, Ct. Thurgau.—Cigars.	623	7	Coffee Surrogate Factory, Zurich.—Fig-meal (surrogate of coffee), served coffee.	656
	Animal and Vegetable Products.		8	Robbi & Co., Geneva.—Chocolate.	656
4	Schleife Tanneries, Winterthur, Ct. Zurich.—Blackened calf leather.	652	9	Schweigert, Auguste, Geneva.—Theodore's sauce.	656

AGRICULTURE.

Vegetable Products, Wines, Liquors.

- 10 Suchard, Ph., Neufchâtel.**—Choco-late, cacaos. 656
- 11 Almen, von, Kopp, Fleurier, Ct. Neufchâtel.**—Absinthe. 660
- 12 Berger, C. F., Couvet, Ct. Neufchâtel.**—Absinthe. 660
- 13 Bernhard, S., Samaden, Engadin, Ct. Graubünden.**—Jva bitter, Jva perfume, and tincture. 660
- 14 Bolle, L. A., Son, Verrières, Ct. Neufchâtel.**—Green and white absinthe. 660
- 15 Grandpierre, J., Geneva.**—Ver-mouth. 660
- 16 Henny & Mouillet, Fleurier, Ct. Neufchâtel.**—Absinthe. 660
- 17 Kirschwasser Company, Zug, Zug.**—Kirschwasser. 660
- 18 Nievergelt, Joh., Maschwanden, Ct. Zurich.**—Kirschwasser. 660
- 19 Pernod, Ed., Couvet, Ct. Neufchâtel.**—Green and white absinthe, gentian-liquor, kirschwasser. 660
- 20 Scherer, Gebr., Meggen, Lucerne.**—Kirschwasser. 660
- 21 Schmidt, Joseph, Zug.**—Sweet-liquors, righibitter, stomach-bitters, kirsch-wasser. 660
- 22 Stauffenerger, Chr., Travers, Ct. Neufchâtel.**—Absinthe. 660
- 23 Gessler-Zeller, J., Basle.**—Leckerly of Basle. 660
- 24 Mattmann, Brothers, C. & J., Horw, near Lucerne.**—Italian pastry. 660

BELGIUM.

(West of Nave, Columns 9 to 13.)

Agricultural, Animal, Vegetable Products.

Agricultural Products.

- 1 Le Bailly, D'Inghuem, Viscount Arthur John, Villeneuve, Switzerland.**—Cereals cultivated in a sandy soil. 620
- 2 Ameye-Berte, Rodolph, Ghent.**—Chi-cory, raw, in the pod, and manufac-tured. 623
- 3 Bonenfant Bros., Jodoigne (Brabant).**—Chi-cory, raw, in the pod, and manufactured. 623
- 4 Devos-Biebuyck, Hal, near Brussels.**—Chi-cory, raw and manufactured. 623
- 5 Vandendaele-Rigot, Charles, Quiévrain (Hainault).**—Steam machine for manufacturing chi-cory, ground mu-stard. 623
- 6 Delannoy, Nicholas, Tournai.**—Cho-colate. 623
- 7 Joveneau, Arthur, Tournai (Hain-ault).**—Powdered cocoa and chocolate; detail of chocolate manufacture. 623

Animal and Vegetable Products.

- 8 Fremery & Co., Oils.** 652
- 9 Bodart, Ed., Louvain (Brabant).**—Sheep skins, white leather, morocco, salted roans. 652
- 10 Chantrain, E., Schaerbeek, near Brussels.**—Leather peltry. 652
- 11 Lebermuth, J., & Co., Brussels.**—Waxed leather and goat skins. 652
- 12 Ocreman, L., & Witdoeck, E., Mech-lin, province of Antwerp.**—Varnished skins. 652
- 13 Schmitz, F. A., & Co., Koekelberg, near Brussels.**—Skins for hats; manufac-tured morocco leather, 652

- 14 Verboeckhoven, E. B., Brussels.**—Varnished and unvarnished hides and skins. 652
- 15 Versé-Spelmans, Brichot, Ant & Co., Brussels.**—Curried leather. 652
- 16 Mirland & Co., Frameries, near Mons (Hainault).**—Dried fruit paste. 656
- 17 Remy & Co., Louvain (Brabant).**—Starch and similar products. 658
- 18 Demeulemeester, V., Ghent.**—Can-dy made from sugar-cane sugar. 659
- 19 Raparlier, Alphonse John, Steen huysc-Wynhuyse, near Grammont, East Flanders.**—Syrups. 659
- 20 Vandendaele-Rigot, Ch., Guiévrain (Hainault).**—Pear, apple, and beet-root syrups. 659
- 21 Charlier, John Baptist, Ghent.**—Beer. 660
- 22 De Beukelaer, F. X., Antwerp.**—Antwerp elixir, hygienic cordial. 660
- 23 Fouassin, Arsenius, Liège.**—Cor-dials. 660
- 24 Schaltin, Pierry & Co., Spa.**—Cor-dial, mineral waters, etc. 660
- 25 Schmidt, Emile, Schaerbeek, near Brussels.**—Belgian bitters, cordial. 660
- 26 Schmitz, Peter, & Laleman, Francis, Charleroi (Hainault).**—Health bitters, hygienic cordial. 660
- 27 Bergh, van den, & Co., Antwerp.**—Gin made from fine grains. 660
- 28 Vandendaele-Rigot, Ch., Quiévrain (Hainault).**—Vinegar. 660
- 29 Wauters-de-Busscher, Mechlin, Province of Antwerp.**—Cordials. 660

Agricultural Products, and Machines, Textile Substances.

30 Damman, Edm., Borgerhout, near Antwerp. —Ship biscuit.	661	35 Müllender, S., Verviers. —Flocks of wool and shearings.	667
31 Casserie, van de, Leopold, Ghent, East Flanders. —Biscuits, etc.	661	36 Delmotte, Hippolitus, Ghent. —White bristles.	669
Textile Substances of Vegetable or Animal origin.			
32 Leclercq, Henry, Courtrai. —Flax.	666	Machines, Implements, and Processes of Manufacture.	
33 Taulez-Bottelier, Charles, Bruges, East Flanders. —Oakum, flax.	666	37 Dassonneville-de-Saint, Hubert, L., Namur. —Stones for grinding grain, cements, etc.	674
34 Bodart, Ed., & Co., Louvain (Brabant). —Cold-washed wool.	667	38 Macque, Leopold, Brussels. —Grinding apparatus.	674

NETHERLANDS.

(Columns A to G, and 3 to 5.)

Agricultural, Animal, Vegetable Products.**Arboriculture and Forest Products.**

1 Thyssen, C. J. F. —Sieve frames.	600
2 Kleintjes, J., Rotterdam. —Plant 100 years old.	601
3 Huiskamp, F. A., Amsterdam. —Cork.	604

Agricultural Products.

4 Dutch Agricultural Society. —Agriculture, horticulture, arboriculture.	620
5 Agricultural Association (collective exhibit), Gelders. —Agricultural products.	620
6 Zeeland Association for Encouragement of Agriculture and Cattle-Breeding (collective exhibit), Middleburg. —Seeds, dye-woods, plants, and photographs of cattle.	620
7 Bouma, H. G., & J. G., Sneek. —Buckwheat.	620
8 Poel, Cz. P. van der, Brielle. —Wheat, barley, oats, cabbage, and seeds.	621
9 Post, C. G. van der, Gonda. —Cigars.	623
10 Bleckmann, A., & B. C., & Van der Pool, H., Arnhem. —Cigars.	623
11 Mignot, A. J., & de Block, A. A. M., Eindhoven. —Cigars.	623
12 Jagt, P. G. van der, & Francois, J. —Cigars.	623
13 Koppen, H. T., & Zoon, Leerdam. —Cigars.	623

Water Animals, Fish Culture and Apparatus.

14 Maas, A. E., Scheveningen. —Boats, nets, hooks, etc.	647
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Animal and Vegetable Products.

15 Heil, L. W., Haarlem. —Edam cheese.	651
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16 Goede, D., Alkmaar. —Cheese.	651
17 Vliet, A. van, Bergumgacht. —Cheese and butter.	651
18 Jong, M., & K., Hoorn. —Edam cheese.	651
19 Draisma van Valkenburg, S., Leeuwarden. —Lard, ivory, bone, horn, and glue.	652
20 Heijusbergen, P. van, Zaandam. —Purified medicinal liver-oil containing iron.	652
21 Draisma van Valkenburg, S., Leeuwarden. —Liver-oil containing iodine and iron.	652
22 Heijusbergen, P. van, Zaandam. —Liver-oil containing iron.	652
23 Klüttgen, J. H., Rotterdam. —Bed-feathers.	653
24 Visser, J., Amersfoot. —Brown and white mead.	654
25 Surie Weduroc, J. W., & Zoon, & Co., Rotterdam. —Preserved eatables.	656
26 Heinwenhuys, jr., J. H., & Co., Amsterdam. —Conserved eatables in tins, boxes, and bottles.	656
27 Van Rijn van Alkemade, Gravenhage. —Preparations of peas, sausages, flour, and drugs.	656
28 Hoogenstraaten, D. A. J., Leiden. —Vegetables and fruit in cans and boxes.	656
29 Wolff, M. M. Z., Amersfort. —Flour, ground and unground.	657
30 Schober, J. H. Wm., Utrecht. —Flour.	657
31 Van Marken, jr., J. C., Delft. —Oil, corn, and corn-cakes.	657
32 Grootes, Pz. M., Westzaan. —Cocoa, chocolate, and chocolatine.	658
33 Driesssen, C. A., J. P., & H. T., Rotterdam. —Cocoa, chocolate, and cocoa-butter.	658

AGRICULTURE.

Vegetable Products, Wines, Liquors.

34 Haagen, R. C. van, Utrecht.—Cocoa, coco-a-butter, and chocolate.	658
35 Egberts, B. H., Dalfsen.—Succory.	658
36 Duijois, J., Koog-aan-de-Zaan.—Starch.	658
37 Veenhoven, Schuringa, & Co., Wil-denaka.—Potato-flour.	658
38 Sloet van Marxveld, G., Baron, Vol-lenhoven.—Syrup in bottles.	659
39 Verweij, H., & Co., Tiel.—Sugar of grape and potato-meal.	659
40 De Bary, M. J., Amsterdam.—Confectionery and chocolate, in forms and moulds.	659
41 Van Marken, jr., J. C., Delft.—Alcohol.	660
42 Pollen, L. P. M., Rotterdam.—Liquors.	660
43 Schade van Westrum, J. C., Schiedam.—Gin.	660
44 Kiderien, E., Delfshaven.—Alcohol and potash.	660
45 Bal, J. J., Middelburg.—Red currant wine.	660
46 Catz, S., Pikel.—Bitters and liquors.	660
47 Groen, Gz. J. B., Amsterdam.—Bitters and wine.	660
48 Stitte, Lz. G., Kampen.—Fine liquors and bitters.	660
49 Holet, J. J. G., Schiedam.—Gin and spirits.	660
50 Bootz, Erven Wed, F. A., Amsterdam.—Liquors.	660
51 Blankenheim, J. J. M., & Lede, C. A. E. van, Rotterdam.—Gin.	660
52 Hoppe, P., Amsterdam.—Gin, liquors, and distillations.	660
53 Bols, de Erven Lucas, Amsterdam.—Fine liquors.	660
54 Oostra, G. Wildervank, Groningen.—Liquor and elixir.	660
55 Hofman, A. J. T., Woerden.—Liquors, bitters, extracts, and spirits.	660
56 Wynand, Fockink, Amsterdam.—Fine liquors.	660
57 Houtman, A., & Co., Schiedam.—Gin.	660
58 Volk, J. van der, & Co., Delfshaven.—Gin made of grain double distilled.	660
59 Zuijlenkom, van Levert, & Co., Amsterdam.—Fine liquors, bitters, gin, brandy, etc.	660
60 Meder, J. J., Schiedam.—Swan gin.	660
61 Livert & Co., Amsterdam.—Liquors.	660
62 Rademakers, A. C., Delfshaven.—Gin.	660
63 Smits, F. H. M., Buda.—Strong beer.	660
64 Van Dulken, Rotterdam.—Gin, brandy, and alcohol.	660
65 Lensvelt, G., Gravenhage.—Table-biscuit, cake, ship-bread.	661
66 Ulrich, W. D., Rotterdam.—Ship-biscuit.	661
67 De Jough, Wz. D., Dordrecht.—Vegetable oils and seed cakes.	662
68 Kruijsmulder, Cz. D., Amsterdam.—Vegetable oils.	662
69 Dutch Association for Encouragement of Flax Industry, Rotterdam.—Flax and linseed.	666
70 Gorter Brothers, Dokkum.—Flax.	666
71 Van Casteel, A. F., Rotterdam.—Holland, Freeland, and Iceland flax.	666
72 Mulder, L., Arnhem.—Periodicals.	680

SWEDEN.

Forest and Agricultural Products.

Agriculture, Arboriculture, and Forest Products.

- 1 Wikström, J. A., for the New Gellivara co. (limited), Lulea.—Fir timber grown at the latitude of 67° N.; specimens of lumber.
- 2 Kalmar Southern Agricultural Society, Kalmar.—Products of sylviculture.

Agricultural Products.

- 3 Fogelmark, Sixten, Afva, Lulea.—Cereals.
- 4 Gotlands Agricultural Society, Visby.—Cereals.

5 Hofmeister, Ch., Ingelstad, Svens-torp.—Cereals.

6 Hultenberg, C. A., Borgholm.—Cereals.

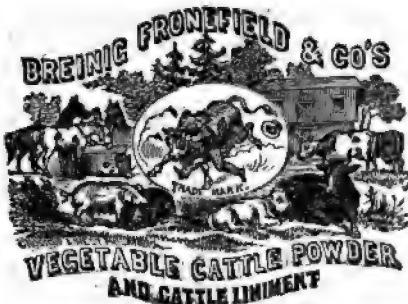
7 Kalmar Agricultural Society, Westervik.—Cereals.

8 Kalmar Southern Agricultural Society, Kalmar.—Cereals and other agricultural products.

9 Malmöhus Agricultural Society, Malmö.—Cereals, grass-seeds, and forage-plants.

10 Platen, Carl von, Count, Arbyhus.—Cereals and seeds of forage-plants.

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In the Horse it will cure Coughs, Distemper, Farcy, Fevers, Gripes, and Colic Inflammation, Hide Bound, Glanders, Staggers, Kidney Disease, Lung Disease, Scours, Loss of Appetite, etc., all depending more or less on a bad state of the blood.

In the Cow it will cure Jaundice or Yellows, Bloody Urine, Bloody Milk, Hollow Horn or Wolf Disease, Garget, etc.

In Hogs it shows its good effects sooner than in any other animal. It keeps them clear of disease, particularly when congregated together in distilleries.

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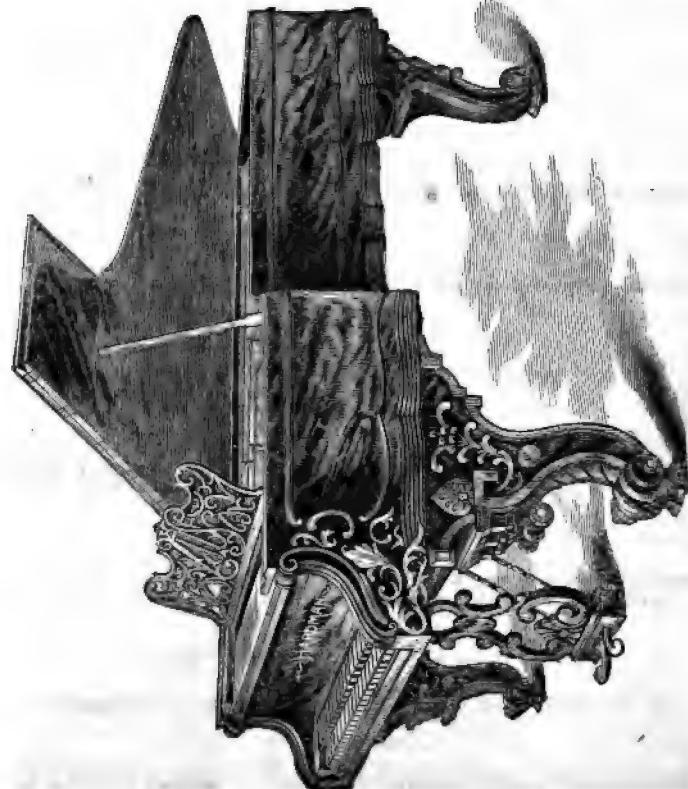
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NEW YORK CITY.



Agricultural and Animal Products, Fish, Plows.

- 11 Rosencrantz, H., Gärnsäs, Hammenhög.—Cereals.** 620
12 Von Scheele, G., Kilanda, Göteborg.—Cereals and grass-seeds. 620
13 Skaraborgs Agricultural Society, Lidköping.—Agricultural products. 620
14 Stenström, O. E., Gärdsjö, Karlstad.—Agricultural products. 620
15 Upsala Agricultural Society, Upsala.—Cereals. 620
16 Westerbottens Agricultural Society, Umeå.—Agricultural products. 620
17 Westmanlands Agricultural Society, Stenby, Strömsholm.—Agricultural products. 620
18 Wikström, J. A., for the New Gellivara Co. (limited), Lulea.—Agricultural products. 620
19 Örebro Agricultural Society, Örebro, Nora.—Cereals. 620
20 Malmöhus Agricultural Society, Malmö.—Seeds of leguminous and other plants. 621
21 Bergren, D., & J., Stockholm.—Tobacco. 623
22 Dahl, P., Carlshamn.—Tobacco. 623
23 Hennig & Papenhagens, Chicory Manufacturing Co., Kalmar.—Raw materials and products. 623
24 Kockums, F. H., Tobacco Manufacturing Co., Malmö.—Tobacco. 623
25 Lundgren, P. W., Stockholm.—Mustard. 623
- Water Animals, Fish Culture, and Apparatus.**
- 26 Kong, C., Royal Centennial Commission.—Fishes living in the Swedish waters.** 641
27 Amundson, C. M., Uddevalla.—Oyster anchovy. 642
28 Andersson, Gustaf, Tjellbacka.—Anchovy and sardines. 642
29 Bergström, H. C., Lysekil.—Anchovy and herrings. 642
30 Ericson, N. O., Lysekil.—Anchovy and herrings. 642
31 Hallgren, J. J., Gulholmen, Oroust.—Anchovy. 642
32 Royal Centennial Commission.
 a Pickled fish. 642
 b Instruments and apparatus for fishing. 647
33 Lundgren, P. W., Stockholm.—Preserved fish. 642
34 Lysell, Aug., Lysekil.—Anchovy. 642
35 Nilsson, Edv., Grebbestad.—Preserved mackerel. 642
36 Leidesdorffska Fishing Apparatus Manufactory, Stockholm.—Instruments and apparatus of fishing. 647
- Animal and Vegetable Products.**
- 37 Mälareprovinsernas Dairy Co., Stockholm.—Canned butter.** 651
38 Wästfelt, Carl C. jr., Kölingsholm, Mullsjö.—Rennet. 651
39 Bock, Ch. A., Klippan, Abö.—Glue prepared for manufacturing paper. 652
40 Ericsson, Anders, Stockholm.—Kid-skin. 652
41 Johannesson, C. S., Stockholm.—Leather. 652
42 Nevelius, C. J., Stockholm.—Kid-skin. 652
43 Nissen, C., Göteborg.—Confections and preserved fruits. 656
44 Frommel, C. J., Göteborg.—Confections and preserved fruits. 656
45 Wikström, N., Stockholm.—Preserved vegetables. 656
46 Landskrona French Flavouring Mills, Landskrona.—Flour and cereals. 657
47 Von Scheele, G., Kilanda, Göteborg.—Flour and other products of grinding. 657
48 Ystad French Flavouring Mills, Ystad.—Flour and other products of grinding. 657
49 Bock, Ch. A., Klippan, Abö.—Starch prepared for manufacturing paper. 658
50 Lundgren, P. W., Stockholm.—Grape-sugar, sago-grit. 659
51 Skanska Sugar Refining Co, Landskrona.—Beet-sugar. 659
52 Berg, C. G., Carlshamn.—Punch. 660
53 Von Bergen, J. N., & Son, Carlshamn.—Punch. 660
54 Broddelius & Åkerman, Göteborg.—Punch. 660
55 Cederlunds, J., Söner, Stockholm.—Punch. 660
56 Creutz, A., Gripsholm, Mariefred.—Punch. 660
57 Dahlheim & Engström, Stockholm.—Punch. 660
58 Hagendahl, C. A., Örebro.—Whisky prepared from reindeer-moss and the raw materials. 660
59 Högstedt & Co., Stockholm.—Punch. 660
60 Lindh, A., Landskrona.—Ale. 660
61 Lundgren, P. W., Stockholm.—Vinegar. 660
62 Petterson, Otto, Stockholm.—Punch. 660
63 Platin, C. G., & Co., Göteborg.—Punch and liquors. 660
64 Thalin, Waldemar, Nyköping.—Punch. 660
65 Wallis, A. B., Dybeck, Skurup.—Ale. 661
66 Teith, H. J., & Söner, Upsala.—Biscuits. 661
67 Kong, C., Royal Centennial Commission, Stockholm.—Dried bread. 661
- Textile Substances of Vegetable or Animal Origin.**
- 68 Ekman, C. D., Bergvik.—Flax rotted by chemicals.** 666
- Machines, Implements, and Processes of Manufacture.**
- 69 Eklundh, L. P., Hjelmafors, Ulricehamn.—Plows.** 670
70 Göteborgs Machine Co., Göteborg.—Plows. 670
71 Palmcrantz, Helge, Stockholm.—Mower. 670

AGRICULTURE.

Agricultural Appliances.

72 Pettersson, C. E., Langö Works, Elf-dalen, Mora.—Scythes.	672	79 Friestedt, A. W., Stockholm.—Com-mercial fertilizers.	681
73 Andersson, J., Kjärdingagärde, Gnosjö.—Cow-bells and sheep-bells.	675	80 Detou, de; Dr., Stockholm.—Arti-ficial manures prepared in Sweden, and their raw materials.	681
74 Atterling, C., Örebro.—Dairy appa-ratus.	675	81 Superphosphate Manufacturing Co., Stockholm.—Fertilizing preparations and their raw materials.	681
75 Kockum, F. H., Malmö, för Kallinge Works, Ronneby.—Dairy utensils of iron and steel.	675	82 Vedelin, F., & Co., Göteborg.—Com-mercial fertilizers.	681
76 Rehnström, W., Tibble, Köping.—Drawing of dairy-houses and utensils.	675	83 Alnarps Agricultural Institute, Akarp.—Drawings of farm-houses.	681
77 Schagelin, G. E., Södertelje.—Dairy utensils.	675	84 Löfvenskiöld, Ch. Em., Bergatorp, Mariestad.—Drawings of farm-houses.	681
Agricultural Engineering and Ad-ministration.		85 Wulff, H. A., Apperum, Kalmar.—Drawings of farm-houses.	681
78 Fertilitas Stock Co. Göteborg.—Commercial fertilizers.	681		

NORWAY.

(West of Avenue F, Columns E 7 to F 9.)

Forest and Agricultural Products, Fish.

Arboriculture and Forest Products.

1 Drammen Steam Planing Mills, Drammen.—Grooved and tongued floor-boarding boards and mouldings.	600
2 Holst, Chr., Ladegaardsøen, Chris-tiania.—Samples of Norwegian wood.	600
3 Fabritius, H., Ullensaker.	
<i>a</i> Models of tents and houses, made of chip. (See Department III, Main Building.)	342
<i>b</i> Models of umbrellas and parasols made of chip. (See Department II, Main Building.)	254
4 Holmen's Sawing and Planing Mills, Drammen.—Grooved and tongued floor-boarding boards and mouldings.	600
5 Koldfossen's Bobbin Works, near Bergen.—Blocks and bobbins of birch and alder, condenser props, etc.	600
6 Thams & Co., M., Orkedal.—Trunks of trees, planks, battens, staves, cornices, cases, etc.	600

Agricultural Products.

7 Schirod, Chr., Aker.—Whet, rye, corn, and barley.	620
8 Holst, Chr., Ladegaardsøen, Chris-tiania.—Cereals in ear and seeds.	620
9 Langaard, Conrad, Christiania.—Cigars, smoking and chewing tobacco.	623
10 Rus, A., Christiania.—Smoking To-bacco.	623
11 With, Johs. N., Christiania.—Ci-gars, smoking and chewing tobacco.	623

Land Animals.

12 Holst, Chr., Ladegaardsøen, Chris-tiania.—Photographs of Telemark cows and description of the race.	31
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Marine Animals, Fish Culture and Apparatus.

13 Museum of Bergen, Bergen.	
<i>a</i> Mammals	640
<i>b</i> Fishes.	641
<i>c</i> Crustaceans.	643
<i>d</i> Mollusks, oysters, etc., stuffed and in alcohol.	644
14 Haar & Wesnæs, Stavanger.—Pre-served herrings, anchovies, etc.	642
15 Bergens Rögeri, Bergen.—Red her-rings.	642
16 Board of Commerce, Bergen.	
<i>a</i> Herrings, cods, lings, saithes, tusks, had-docks, etc., pickled and dried.	642
<i>b</i> Fish-oil, fish-roses.	646
17 Board of Commerce, Alesund.	
<i>a</i> Dried and salted fish.	642
<i>b</i> Collection of fishing tackle.	647
18 Hjul & Platou, Christiania.—Ancho-vies.	642
19 Johnsen, Chr., Christiansund.—Salted and dried cod.	642
20 Meyer, Gerd., Bergen.—White her-rings.	642
21 Mohn, Peter, Bergen.—White her-rings.	642
22 Nordrock, Wm., Christiania.—An-chovies.	642
23 Tellefsen, Mrs. Rina, Christiania.—Ancho-vies.	642
24 Smith, Mrs. Gina, Christiania.—An-chovies.	642
25 Soyland, L. B., Flekkefjord.—Pre-served fish.	642
26 Dons, Henrik, Christiania.—Fish and anchovies.	642

Animal and Vegetable Products, Agricultural Implements.

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28 Foyn, Sven., Tønsberg. —Whale oil, stearine. (<i>See Department II, Main Building.</i>)	201	53 Norwegian Condensed Milk Company, Christiania. —Condensed milk.	656
29 Hjorth, Fr., Fredrikstad. —Ancho-vies.	642	54 Thorne, Chr. Aug., Moss. —Preserved meat and vegetables.	656
30 Lund, Georg, Christiania. —Ancho-vies.	642	55 Norwegian Preserving Co., Mandal. —Preserved meats and vegetables.	656
31 Eriksen, Erik, Christiania. —Ancho-vies.	642	56 Christiania Brewery, Christiania. —Pale ale.	660
32 Just, C. C., Christiania. —Ancho-vies.	642	57 Dahl, E. C., Trondhjem. —Pale ale.	660
33 Bordewich & Co., Lyngvær. —Fish-meal, fish-glue, caviar, fish-oil.	646	58 Forseth & Co., O. N., Christiania. —Pale ale.	660
34 Dahl, Jens. O., Havøen. —Cod and herring nets, cod-lines.	647	59 Frydenlund Brewery, Christiania. —Pale ale.	660
35 Erichsen, Thomas, Bergen. —Fishtooks.	647	60 Hamar Brewery, Hamar. —Pale ale.	660
36 Fagerheim Net Company, Bergen. —Salmon and herring seines, cod, mackerel, and herring nets.	647	61 Kongsberg Brewery, Kongsberg. —Pale ale.	660
37 Kraasby Brothers, Aalesund. —Bait for cod-lines.	647	62 Lundetangen's Brewery, Skien. —Pale ale.	660
38 Falck, Ytter, Christiania. —Norwegian fishing sled with implements.	647	63 Lysholm, Jorgen B., Trondhjem. —Norwegian brandy and punch.	660
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40 Rosing's, A., widow, Christiania.		65 Ruud, J. A., Christiania. —Pale Ale from Moss brewery, Norwegian corn brandy.	660
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^b Crackers of fishmeal.	661	67 Brodersen, N., Drammen. —Norwegian cordials.	660
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44 Hallen, J. P., Christiania. —Leather.	652	71 Anisdahl, R. O., Skien. —Drops and peppermint.	662
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9 Parlato, Luigi, Syracuse, Sicily.— Almonds.	605
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20 Agrarian Colony of S. Martino, Pa- lermo.—Grains.	620
21 Grande Latino, Baron Corrado, & Bros., Avola, Palermo.—Grain prod- ucts.	620
22 Porcari, Baron Angiolo, Palermo.— Grain products.	620
23 Fornaja, Vincenzo, Cologna Veneta, Verona.—Various cereals.	620
24 Ferrarini Bros. & Co., Formigine, Modena.—Rice.	620
25 Malinverni, Secondo, Vercelli, No- vara.—Rice.	620
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SEWING COTTON MANUFACTURERS FROM A. D. 187(

AGENTS IN THE UNITED STATES:

Messrs. WILSON & MERRILL, BOSTON

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60	Nenzioni Brothers, Bologna.—Preserved tomatoes.	656	93	Guli, Salvatore, Cav., Palermo.—Candied fruits.	656
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62	Grillini, Nanni & Co., Bologna.—Sausages and salted meats.	656	95	Palazzo, Duke del, Catania.—Paste for soup.	656
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64	Bordoni, Natale & Co., Bologna.—Sausages and salted meats.	656	97	Caliri, Salvatore, Messina. a Candied fruits.	656
65	Bassi, Medando, & Ugo Brothers, Bologna.—Sausages and salted meats.	656	b Liquors.	660	
66	Tacconi, Paolo, Bologna.—Sausages and salted meats.	656	98	Botti, Alessandro, Chiavari, Genoa. a Dried fruits.	656
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68	Frigieri, Giuseppe, Modena.—Hams, bologna sausages, etc.	656	99	Bornia Brothers, Treviso. a Pickles.	656
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AGRICULTURE.

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126 Enological Society of Savigliano.—Wine.	660	161 Salvo, Salvatore di, Giarre Moscali, Messina.—Wines.	660
127 Buton, G. & Co., Bologna.—Liquors.	660	162 Salvo, Salvatore de, Messina.—Wines.	660
128 Rossi, Leopardi Cav. Cesard, Comiso, Syracuse.—Wine.	660	163 Pasali, Gaetano, Fermo and Cotignano, Ascoli Piceno.—Liquors.	660
129 Maltese, Felice, Mayor of Vittorio Scoglietti, Sicily.—Wines.	660	164 Solinas, Arras Giuseppe, Sassari.—Wines.	660
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134 Caretti Brothers, Rome.—Vermouth and liquors.	660	169 Bonei Cassuccini Ottavio, Sienna.—Wine.	660
135 Strutt, Arthur I., Rome.—Wine.	660	170 Zigliani, Camillo, Bergamo.—Vinegar and essence of vinegar.	660
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201 Maltese, Felice, Vittorio, Sicily.—Wine. 660
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208 Farinola, M. Paolo, Florence.—Wine. 660
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214 Zannini & Galliani, Milan.—Liquors and extract of tamarind. 660
215 Isolatelli & Co., Milan.—Vermouth and liquors. 660
216 Cordini, Gaetano, & Brivio, Busto Arsizio, Milan.—Vermouth and liquors. 660
217 Branca Brothers & Co., Milan.—Vermouth, liquors, alcohol. 660
218 Facheris, Enrico, Lodi, Milan.—Wines and vinegar. 660
219 Vittone, Domenico, Milan.—Vermouth and liquors. 660
220 Ricasoli, Bettino, Baron, Florence.—Wines. 660
221 Montini, Pasquale, Fabriano, Ancona.—Vermouth and liquors. 660
222 Brenna, Santo, Como.—Liquors. 660
223 Nistri, Ferdinando, Florence.—Liquors. 660
224 Mostardini, Adolfo, Florence.—Liquors. 660
225 Cita, Francesco, & Co., Naples.—Liquors. 660
226 Marini, Ambrogio, Milan.—Liquors. 660
227 Scala, Giuseppe, Naples.—Wines. 660
228 Galloni, Luigi, Rome.—Wines. 660
229 Evoli, Ma. Giovanni, Rome.—Liquor. 660
230 Scala Pasquale, Naples.—Wine. 660
231 Francica Brothers, Naples.—Wine. 660
232 Barra, Luigi, Naples.—Wine. 660
233 Patalano, Orazio, Ischia Island, Naples.—Wine. 660
234 Masetti, Piero Pompeo, Count, Florence.—Wine. 660
235 Siccoli, Guido, Florence.—Wine. 660
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241 Cerri, Luigi, Cremona.—Torrone with almonds. 661
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243 Andronico, Giuseppe, Nice, Messina.—Biscuits and paste for sea. 661
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250 Torriatti, Luigi di Gio., Venice.—Harrow. 670
251 Porri, Luigi, Pisa.—Plow-share. 670

AGRICULTURE.

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253	Calzoni, Alessandro, Bologna.—Agricultural machine.	670
254	Gattola, Nicola, Bari.—Plow.	670
255	Biggi, Giovanni & Co., Piacenza.—Hand reaping machine.	672
256	Uliengo, Giovanni, Biella, Novara.—Butter machine.	675

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258	Tramontani, D., Bologna.—Beehive.	653

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BRAZIL.

Forest and Agricultural Products.

Arboriculture and Forest Products.

1	Leao, Hermelino de.—Coal obtained from pine heart.	600
2	Muricy, Dr.—Pine heart.	600
3	Aranjo & Silva.—Samples of woods.	600
4	Juparana, Baron de.—Samples of woods.	600
5	Faria, Louza.—Samples of woods.	600
6	Villa-Franca, Baron de.—Samples of woods.	600
7	Provincial Commission of S. Paulo.—Samples of woods.	600
8	Cavalcanti.—Samples of woods from Alagoas.	600
9	Province of Rio de Janeiro.—Samples of woods.	600
10	Castro, Borja.—Samples of woods used at the custom-house dock works, Rio de Janeiro.	600
11	Penitentiary, Rio de Janeiro.—Showcases made of Brazilian woods.	600
12	Conceiro.—Samples of woods in mosaic.	600
13	Barbosa, F.—Samples of woods.	600
14	Abrucy, Dr.—Samples of woods from Parana.	600
15	Hermelino, Dr.—Samples of woods from Parana.	600
16	Province of Bahia.—Samples of woods and medicinal leaves.	600
17	Leite, Severino.—Ticus leaves.	600
18	Silva, Domingos.—Samples of woods from Macahé.	600
19	Province of Parana.—Lumber and timber.	600
20	Bueno, Rimenta.—Samples of woods from Para.	600
21	Rocha, Ignacio da.—Pine lumber from Parana.	600
22	Province of Goyaz.	
	g Paparo or paper tree and samples of wood.	600
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36	Martins, Ant.—Barley.	620
37	Schamalake.—Barley.	620
38	Richter, Frederico.—Cereals.	620
39	Leao, Hermelino de.	
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67	Rio-Novo, Viscountess of.—Coffee from Uniao.	623
68	Pripod, Silvino.—Coffee.	623
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70	Bella-Vista, Baron de.—Coffee.	623
71	Machado, Marcondes.—Coffee.	623
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78	Costa, Maria da.—Coffee.	623
79	Camargo, Pompen de.—Coffee from Campinas.	623
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81	Jordao, R.—Coffee.	623
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84	Camargo, Santos.—Coffee.	623
85	Amaral, Theresa do.—Coffee from Campinas.	623
86	Amaral, Francisco do.—Coffee from Campinas.	623
87	Nogueira, Ramos.—Coffee from S. Paulo.	623
88	Gaviao, Bernardo.—Coffee from S. Paulo.	623
89	Sonza, Paula.—Coffee from S. Paulo.	623
90	Barros, Raphael de.—Coffee from S. Paulo.	623
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97	Santos, Cornelio dos.—Coffees.	623
98	Prados, Viscount de.—Coffee from Minas-Geraes.	623
99	Assiz, Ferreira d'.—Coffee from Minas-Geraes.	623
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101	Alves, Assiz.—Coffee from Minas-Geraes.	623
102	Freire, Manuel.—Coffee from S. Paulo.	623
103	Caroalho, Zacharias de.—Coffee from Sergipe.	623
104	Freire & Bros.—Coffee.	623
105	Breve, Sonza.—Coffee.	623
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AGRICULTURE.

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176 Mana, Vicount de.—Refined sugar.	659	
177 Desincourt.—Crystallized sugar.	659	
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179 Barros, Fernandes de.—Sugar.	659	
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181 Costa, Ribeiro de.—Sugar.	659	
182 Souza, Alves de.—Sugar.	659	
183 Vianna, Paula.—Sugar.	659	
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THE ORIGIN OF CO-OPERATIVE NEWSPAPER ADVERTISING.

Co-operative newspaper printing, as now practised, originated in Wisconsin twelve years ago. It is termed *co-operative* for the reason that one side of each of the newspapers is printed at a central office, and the paper sent in its half-printed state to the home office, where it is completed with editorials, local news, and other matter prepared by the editor or publisher. In December, 1846, the idea of co-operation, *with advertisements*, occurred to Mr. Aikens, while yet serving his time as an apprentice, in printing the message of President Polk on one side of a country newspaper of New England at Boston, and the other half being printed at the local office.

Mr. A. J. Aikens, a practical printer and business man, conceived the idea of reducing the cost of ready-printed paper, as it is now termed, to country publishers, by making an agreement with them to use a certain space in each of their papers for advertisements that he might procure. This plan of co-operation he put into practice twelve years ago, at the office of Cramer, Aikens & Cramer, Milwaukee. It at once became successful, leading to the establishment of co-operative newspaper printing-offices in Chicago, New York, St. Louis, Cincinnati, Memphis, St. Paul, and other places. There are now over two thousand newspapers printed upon the co-operative plan in the United States and Canadas, and the number is constantly increasing, it having more than doubled in the last five years. The enterprise is no longer an experiment, but an established success, and the system is one yielding manifold advantages to advertisers as well as to local publishers.

The American Newspaper Union

Is essentially national. The papers represented in it are located in all the States of the Union and in nearly five hundred county seats. They circulate over the whole area of the country from Maine to Colorado, distributing at least *one hundred copies every year to each square mile of the settled portions of the United States.*

Although, as a whole, the Union List is national, covering all sections, it is so made up of different members as to be susceptible of easy division into sections—East, Middle, West, South. The distribution of the papers is as follows:

New England	78	Illinois	117	Nebraska	15
New York	101	Michigan	86	Missouri	17
New Jersey	27	Wisconsin	98	Georgia	10
Pennsylvania	65	Tennessee	29	Alabama	52
Virginia	24	Kentucky	29	Louisiana	11
No. and So. Carolina	24	Minnesota	79	Mississippi	29
Ohio	122	Iowa	85	Other States	46
Indiana	81				

AGGREGATE CIRCULATION.

The circulation of these papers is large and constantly increasing. It is larger than the circulation of any other lists or combinations of country papers in the United States—the last aggregate weekly circulation being *seven hundred thousand seven hundred and thirty copies* (700,730).

SEND TO EITHER OFFICE FOR A CIRCULAR.

Vegetable and Animal Products, Machines.

190 Braga & Co.		
^a Syrups.	659	
^b Liquors; aguardente, cognac, etc.	660	
191 Province of Bahia.		
^a Refined sugar.	659	
^b Chocolate of musgo.	661	
192 Barroso, Paula.		
^a Sugar.	659	
^b Aguardente from sugar-cane.	660	
193 Castro, Ribiero de.		
^a Sugar.	659	
^b Brandy from sugar-cane.	660	
194 Aranjo, Ignacio de.—Liquors.	660	
195 Oliveira, Roiz de.—Liquors.	660	
196 Carvalho, Leitao de.—Larangiuha and gin.	660	
197 Faleas, Piris.—Aguardente.	660	
198 Reposo, Amaral.—Wines and liquors.	660	
199 Pinto, Oliveira.—Aguardente from sugar-cane and caju wine.	660	
200 Azcoedo, Pereira de.—Aguardente.	660	
201 Carvalho, M. de.—Gin.	660	
202 Jeremoabo, T.—Aguardente from honey.	660	
203 Schulmann & Co.—Wine and vine- gar from sugar-cane.	660	
204 Pimenta, Mattos.—Hesperidina- Yagurembo'.	660	
205 Oliveira, C.—Wine and aguardente from sugar-cane; vinegar from pine- apple.	660	
206 Frey, Otto.—Liquors.	660	
207 Vasconcellos, P. de.—Orange wine.	660	
208 Cattermolle, Erdman.—Wines and liquors.	660	
209 Alves & Co.—Liquors.	660	
210 Barroso, Carvalho.—Alcohol.	660	
211 Silveira, N.—Aguardente.	660	
212 Pinheiro, Thomaz.—Larangiuha.	660	
213 Caipora, Guimaraes.—Larangiuha.	660	
214 Bella-Vista, Baron, de.—Aguar- dente.	660	
215 Province of Para.—Guarana.	660	
216 Pereira, Estevao.—Larangiuha, aguardente from sugar-cane.	660	
217 Itabapoana, Baron de.—Larangiu- ha.	660	
218 Silva, Carneiro da—Larangiuha.	660	
219 Rebello, Silva.—Liquor from coffee and other plants.	660	
220 Mamede.—Caju wine for medicinal purposes.	660	
221 Macedo, J. de.—Liquors.	660	
222 Le Page.—Wines and Vinegar.	660	
223 Viotte.—Peach liquor.	660	
224 Viarma, Oliveira.—Aguardente.	660	
225 Biagem, Boa, Baron da.—Aguar- dente.	660	
226 Sardinha.—Wine.	660	
227 Pinho, Franciscode.—Chocolate.	661	
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235 Province of Paralyba.—Cotton.	665	
236 Province of Rio Grande do Norte. —Cotton.	665	
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249 Province of Bahia.—Vegetable hair.		666
250 Province of S. Paulo.—Paina.		666
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255 Resende, Luiz de.—Silk-worms, cocoons, reeled silk, and apparatus for reeling silk.		668
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257 Autumes, J. A.—Machine for pre- paring coffee.		674
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259 Province of Amazonas.—Guano.	681	
260 Muricy & Leao.—Guano.	681	
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ARGENTINE REPUBLIC.

Arboriculture and Forest Products.

Arboriculture and Forest Products.

- 1 Commission of the Chaco Argentine Territory.**
a Collection of natural and polished woods. 600
b Indigo plant and curupai bark. 600
- 2 Gallegos, Miguel, Chaco Argentine Territory.**—A cane; samples of wood. 600
- 3 Aguilar, Francisco D., Province of San Juan.**—Flowers made from carob tree wood; chick wood; collection of woods to be presented to the National Department of Agriculture. 600
- 4 Langan, Juan, Province of San Juan.**—Collection of woods. 600
- 5 Provincial Commission, Province of Santa Fé.**
a Collection of woods, polished lignum-vite. 600
b Laurel bark and tanning materials. 600
- 6 Echevarria, Cecilio, Province of Santa Fé.**
a Collection of woods; polished samples. 600
b Dyes. 600
- 7 Provincial Commission, Province of Córdoba.**
a Collection of woods; polished samples. 600
b White carob tree and malle seed. 600
- 8 Correjo, Juan, Province of Salta.**
a Cherimoya seed. 600
b Palo Santo resin. 600
- 9 Fleming, Miguel, Province of Salta.**—Tipa and tarco seed. 600
- 10 Provisional Commission, Province of Salta.**
a Collection of seeds and woods. 600
b Dyeing and tanning materials. 600
- 11 Billar, Salvador, Province of Jujui.**
a Collection of woods. 600
b Sococo and pastilla bark. 600
c Palm, lignum-vite, quina-quina and pacara seeds, etc. 600
- 12 Provincial Commission, Province of Catamarca.**
a Collection of logs. 600
b Dyeing and tanning materials. 600
c Viscos and lignum-vite seeds. 600
- 13 Provincial Commission, Province of La Rioja.**
a Collection of woods. 600
b Tar, carob resin, and Lata incense. 600
c Yareta plant, containing much resin. 600
d Collection of seeds. 600
- 14 Cecciarro, Vicente, Province of Catamarca.**—Viscote wood. 600
- 15 Quevedo, Samuel Lafone, Province of Catamarca.**—Black carob wood. 600
- 16 Andalgala Commission, Province of Catamarca.**
a Cactus. 600
b Dyeing and tanning products. 600
- 17 Provincial Commission, Province of Tucuman.**
a Samples of wood in logs, partly polished. 600
b Cedar bark for tanning. 600
- 18 Provincial Commission, Province of Mendoza.**
a Samples of wood in logs. 600
b Chanar bark for cleaning cloth and Retorno for tanning. 600
c Gums and resins. 600
- 19 Videla, Victor, Province of San Luis.**—Collection of woods; polished samples. 600
- 20 Provincial Commission, Province of Corrientes.**
a Collection of polished and unpolished woods. 600
b Bark of black laurel and curupay tree, used for tanning, etc. 600
c Peanuts, and creeping plant called curupay guaro. 600
- 21 Roibon, Enrique, Province of Corrientes.**—Caroba wood. 600
- 22 Resvagli, Luis, Province of Corrientes.**—Collection of woods; boxes. 600
- 23 Bella Vista Sub-Commission, Province of Corrientes.**
a Collection of woods. 600
b Orange seed, chichita, suspiros, pea nuts. 600
- 24 Ferre, Vicente, Province of Corrientes.**—Sticks of different woods. 600
- 25 National Department of Agriculture, Province of Corrientes.**—Samples of Urunday wood. 600
- 26 Justice of the Peace of Ensenada, Province of Buenos Ayres.**—Collection of woods. 600
- 27 Valdes, Emiliano, & Cipriano, Province of Buenos Ayres.**
a Collection of curromambo and other woods. 600
b Mushrooms grown on willow bark. 600
- 28 Agricultural School of Santa Catalina, Province of Buenos Ayres.**—Beehives made of black acacia. 600
- 29 Roibon, Federico, Province of Corrientes.**—Pictures of trees in water-colors. 600
- 30 Boero, José, and Poletti, Antonio, Province of Buenos Ayres.**—A rack made of twenty-five kinds of wood. 600
- 31 Iñiguez, Manuel, Province of Buenos Ayres.**—Specimens of woods. 600
- 32 Provincial Commission, Province of Santiago del Estero.**
a Collection of woods in logs. 600
b Collection of dyeing woods, etc. 600
- 33 Provincial Commission, Province of Entre-Ríos.**—Samples of polished woods. 600

Forest and Agricultural Products

34	Elola, P., Province of Entre-Ríos.—	
	Collection of woods.	600
35	Berdeu, Martin, Province of Entre-Ríos.—	
	Box made of different woods.	600
36	Parana, Commission, Province of Entre-Ríos.	
<i>a</i>	Collection of woods.	600
<i>b</i>	Routs and barks; cochineal and dyeing materials.	602
<i>c</i>	Turpentine.	603
37	Roman, José, Province of Entre-Ríos.—Carob and mandubay wood.	600
38	Garrigos, J. M., Province of Entre-Ríos.—Collection of woods.	600
39	Gallino, J. A., Province of Entre-Ríos.—Collection of woods.	600
40	Echechegarre, Pedro, Province of Entre-Ríos.—Collection of woods.	600
41	Fontes, Vicente and Neyra, Sisto, Province of Entre-Ríos.—Collection of woods.	600
42	Calderon, Pedro, Province of Entre-Ríos.—Collection of woods.	600
43	Gonzalez, Meliton, Province of Entre-Ríos.—Collection of woods.	600
44	Goyri, Bernardo, Province of Entre-Ríos.—Samples of different seeds.	600
45	Provincial Commission, Province of San Luis.	
<i>a</i>	Dyeing and tanning products.	602
<i>b</i>	Gum and resi	603
46	Medina, Luis R., Province of Catamarca.—Cocounut bark.	602
47	Hurley, Tomas, Province of Catamarca.—Dyeing products.	602
48	Sievert, Max, Province of Salta.	
<i>a</i>	Silk and wool dyed with the product of the lapacho tree; other dyeing products.	602
<i>b</i>	Peat.	604
49	Gonzalez, Joaquin, Province of La Rioja.	
<i>a</i>	Sacanza for dyeing.	602
<i>b</i>	Guano, roots, etc.	603
50	Wurffbain, Gustavo, Province of La Rioja.	
<i>a</i>	Roots for tanning and dyeing, cleansing substances replacing soap, jume for making soap.	602
<i>b</i>	Cotton-seed.	605
51	Gelos, Martin, Province of La Rioja.—Dyeing and tanning products	602
52	Fava, Carlos, Province of Corrientes.—Cochineal and indigo-plant.	602
53	Lopez, Feliciano, Province of Corrientes.—Mbut plant, for dyeing silk and wool.	602
54	Pujol, Elisa, Province of Corrientes.—Root of isypoyu, for dyeing; coloring-roots.	602
55	Poisson, J. F., Province of Corrientes.—Urucu-seed, for dyeing.	602
56	Ritsch, Felipe, Province of Mendoza.—Roots for dyeing	602
57	Ocampo & Acosta, Province of Cordoba.—Bark, seed, and other products for tanning.	602
58	Several Exhibitors, Province of San Juan.—Dyeing materials.	602
59	Ubach de Colon, José, Province of Entre-Ríos.—Sarsaparilla, carob-bark, and other tanning and dyeing products.	602
60	Sub-commission of the Department of Diamante, Province of Entre-Ríos.—Cochineal, carob-bark, and other dyeing and tanning materials.	602
61	Soler, Ventura, Province of Entre-Ríos.—Laurel and carob-bark and other dyeing and tanning materials.	602
62	Rodriguez, Severo, Province of San Juan.	
<i>a</i>	Resins of chilca, etc.	603
<i>b</i>	Carob and myrrh seed.	605
63	Balban, Nonasea, Province of Catamarca.—Carob-resin and black resin for dyeing.	603
64	Flores, Nicanor, Province of Salta.—Tar.	603
65	Solla, Juan, Province of Salta.—Yareta, a resinous plant.	603
66	Riso, Petrona, Province of Catamarca.—Cherimoya seed.	605
67	Machado, Ruben, Province of Catamarca.—Mistol and carob tree seed.	605
68	Ponce, Isidora, Province of Catamarca.—Molle seed.	605
69	Esparsa, José, Province of Catamarca.—Seed of acacia aroma, for dyeing and medicinal purposes.	605
70	Miranda, José, Province of Catamarca.—Acacia for feed and for hedges.	605
71	Albarez, Francisco, Province of La Rioja.—Malingasta nuts.	605
72	Larrahona, Pedro, Province of La Rioja.—Malingasta nuts.	605
73	Chaves, Crisologo, Province of La Rioja.—Tusca seeds.	605
74	Peluffo, Vicente, & Co., Province of Buenos Ayres.—Collection of seeds.	605
Agricultural Products.		
75	Imar Bros., Province of Buenos Ayres.—Wheat.	620
76	Unzué, Saturnino, Province of Buenos Ayres.—Wheat.	620
77	Grego, A., Province of Buenos Ayres.—Wheat.	620
78	Diaz, Eugenio, Province of Buenos Ayres.—Wheat.	620
79	Traverso, Juan, Province of Buenos Ayres.—Wheat.	620
80	Bruno, Domingo, Province of Buenos Ayres.—Wheat.	620
81	Alonso, Manuel, Province of Buenos Ayres.—Wheat.	620
82	Ibarra, Venero, Province of Buenos Ayres.—Wheat.	620
83	Provincial Commission, Province of Buenos Aires.—Wheat.	620
84	Bertolate, G., Province of Buenos Ayres.—Wheat.	620
85	Buffa, Agustin, Province of Buenos Ayres.—Wheat.	620
86	Lanson, N., Province of Buenos Ayres.—Wheat.	620
87	Malvichini, N., Province of Buenos Ayres.—Wheat.	620
88	Costa, Bartolo, Province of Buenos Ayres.—Wheat.	620
89	Justice of the Peace of Juarez, Province of Buenos Ayres.—Wheat.	620

AGRICULTURE.

Agricultural Products.

- 90 Justice of the Peace of Patagones,** Province of Buenos Ayres.—Wheat, barley, and corn. 620
- 91 Guerrin, N., Province of Buenos Ayres.**—Wheat. 620
- 92 Mildred, Juan, Province of Buenos Ayres.**—Wheat and barley. 620
- 93 Justice of the Peace of Bahia Blanca,** Province of Buenos Ayres.—Wheat, barley, and corn. 620
- 94 Burgos, R., Province of Buenos Ayres.**—Wheat. 620
- 95 Acuña, Francisco, Province of Buenos Ayres.**—Barley and corn. 620
- 96 Peluffo, Angel, Province of Buenos Ayres.**—Barley. 620
- 97 Agricultural School of Santa Catalina,** Province of Buenos Ayres.—Corn. 620
- 98 Arce, Invencio, Province of Buenos Ayres.**—Corn. 620
- 99 Justice of the Peace of Zarate,** Province of Buenos Ayres.—Corn. 620
- 100 Martines, Hercules, Province of Buenos Ayres.**—Corn. 620
- 101 Unzué, Saturnino, Province of Buenos Ayres.**—Corn. 620
- 102 Valdez, Emiliano, Province of Buenos Ayres.**—Corn. 620
- 103 Peluffo, Angel, Province of Buenos Ayres.**—Lima beans. 620
- 104 Agricultural School of Santa Catalina,** Province of Buenos Ayres.—Fresh beans; lentils. 620
- 105 Valdes, Emiliano & Cipriano, Province of Buenos Ayres.**
a Barley, sugar-cane, straw, etc. 620
b Garlic. 621
- 106 Galarani, Carlos, Province of Buenos Ayres.**—Flax, barley, corn, wheat, maize, Lima beans, and cattle-feed. 620
- 107 Government of the Province of San Juan.**—Grasses, straw, maté herb, etc. 620
- 108 Rodriguez, Victor, Province of San Juan.**—Junquille. 620
- 109 Sarmiento, Juan L., Province of San Juan.**—Yellow and white corn; wheat. 620
- 110 Correa, Benidicto, Province of San Juan.**—Corn. 620
- 111 Mazo, Julian, Province of San Juan.**
a White and red corn. 620
b Lima beans. 621
- 112 Amafil, Benigno, Province of San Juan.**—Yellow corn. 620
- 113 Frias, Salvador, Province of San Juan.**—White corn, barley, wheat. 620
- 114 Vidal, Marco A., Province of San Juan.**—Red corn. 620
- 115 Jones, Fabian, Province of San Juan.**—Red corn; wheat. 620
- 116 Aguilar, Juan M., Province of San Juan.**—Red corn; wheat. 620
- 117 Ruiz, Clemente, Province of San Juan.**
a Red corn, wheat. 620
b Lucern seed and Lima beans. 624
- 118 Jofré, Roman, Province of San Juan.**—Red corn. 620
- 119 Rufino, Geronimo P., Province of San Juan.**—White corn. 620
- 120 Figueroa, Tomas, Province of San Juan.**—White corn. 620
- 121 Ruiz, G., Province of San Juan.**—White corn. 620
- 122 Balaguer, Tristan, Province of San Juan.**—White and Oregon corn. 620
- 123 Rosa, Rosario de la, Province of San Juan.**—Corn, lucern seed. 620
- 124 Baca, Province of San Juan.**—Corn, wheat. 620
- 125 Lloveras, Lisandro, Province of San Juan.**—White corn. 620
- 126 Cordero, Pedro J., Province of San Juan.**—White corn. 620
- 127 Castro, Pedro, Province of San Juan.**—White corn flour. 620
- 128 Bates, Benjamin, Province of San Juan.**
a Wheat. 620
b Canary seed. 624
- 129 Aubone, Daniel, Province of San Juan.**—Lima beans. 620
- 130 Cordero, Pedro, Province of San Juan.**—Peas. 620
- 131 Farias, José A., Province of San Juan.**—Lima beans, peas, etc. 620
- 132 Rufino, Geronimo C., Province of San Juan.**—Lima beans, peas. 620
- 133 Bodarata, Juan, Province of San Juan.**—Barley. 620
- 134 Ramirez & Co., Province of San Juan.**
a Barley, white corn. 620
b Lima beans, peas, etc. 621
- 135 Cordero, Pedro J., Province of San Juan.**—Barley, lucern seed, wheat. 620
- 136 Vidal, Marco, Province of San Juan.**—White wheat. 620
- 137 Day, Frederica, Province of San Juan.**—Wheat. 620
- 138 Muñoz, Brancisco, Province of San Juan.**—Wheat. 620
- 139 Ledesma Bros., Province of San Juan.**—Wheat. 620
- 140 Provincial Commission, Province of Salta.**
a Corn, lucern seed, peanuts, barley, wheat, melons, sugar-cane, etc. 620
b Tobacco. 623
c Onion seed. 624
- 141 Fleming, Miguel, Province of Salta.**
a Wheat and corn. 620
b Potatoes. 622
- 142 Toro, Ignacio, Province of Salta.**—Wheat, barley, and lucern seed. 620
- 143 Gonzalez, Joaquin, Province of La Rioja.**—Corn for flowers, and also for flour, wheat, lucern seed. 620
- 144 Davila, Guillermo, Province of La Rioja.**
a White corn, sugar corn, wheat. 620
b Lima beans. 620
- 145 Larrohon, Pedro, Province of La Rioja.**
a Corn, wheat. 620
b Lima beans. 621
- 146 Villafane, Nicolasa, Province of La Rioja.**
a Corn. 620
b Lima beans. 621
- 147 Illas, José Manuel, Province of La Rioja.**—White corn, barley, wheat. 620

Agricultural Products.

148 Provincial Commission, Province of La Rioja.		
a Corn, wheat, barley.	620	
b Lima beans.	621	
c Onion seed.	624	
149 Gonzalez, Ventura, Province of La Rioja.—Wheat.	620	
150 Davila, Bonifacio, Province of La Rioja.—Lima beans.	620	
151 Bascufian, Francisco, Province of La Rioja.—Lucern seed, Lima beans.	620	
152 Alvarez, Francisco, Province of La Rioja.		
a Wheat in stalks.	620	
b Lima beans.	621	
153 Muro, Froilan, Province of Catamarca.		
a Corn, cresenton.	620	
b Lima beans and peas.	621	
154 Diaz, Ramon, Province of Catamarca.		
a Wheat.	620	
b Lima beans.	621	
155 Artasa, Santiago, Province of Catamarca.—Lima beans, Spanish peas, wheat.	620	
56 Provincial Commission, Province of Catamarca.		
a Corn, wheat, barley, lucern seed.	620	
b Lima beans.	621	
c Indian pepper, tobacco, cigars, etc.	623	
157 Molina, José, Province of Catamarca.—Corn, wheat.	620	
158 Vega, G., Province of Catamarca.—White corn, cresenton.	620	
159 Artasa, Manuel, Province of Catamarca.—Corn, etc.	620	
160 Miranda, José A., Province of Catamarca.—White corn.	620	
161 Sub-commission of the Department of Casta, Province of Catamarca.		
a Corn.	620	
b Lima beans, etc.	621	
162 Sub-commission of the District of Alto, Province of Catamarca.—White corn.	620	
63 Alvarez, S., Province of Catamarca.—Seed-wheat.	620	
164 Ahamada, B., Province of Catamarca.—Wheat.	620	
165 Riso, Ventura, Province of Catamarca.—Geneva wheat.	620	
166 Herrera, Miguel, Province of Catamarca.—Wheat.	620	
167 Aguilar, Olegaria, Province of Catamarca.—Wheat.	620	
168 Tula, Nabor, Province of Catamarca.—Wheat, lucern seed.	620	
169 Sub-commission of Belem, Province of Catamarca.		
a Corn, wheat.	620	
b Lima beans.	620	
170 Sub-commission of the Department of Pachin, Province of Catamarca.—Small corn, wheat, Geneva seed, white and yellow corn, Lima beans.	620	
171 Sub-commission of the Department of Santa Maria, Province of Catamarca.—Corn and wheat.	620	
172 Alric, Antonio, Province of San Luis.—Corn, wheat, and barley.	620	
173 Provincial Commission, Province of San Luis.—Corn and wheat, beans, barley, and cattle feed.	620	
174 Arondo, Agustin, Province of Entre-Rios.—Wheat.	620	
175 Parafia Commission, Province of Entre-Rios.		
a Peanuts, corn, etc.	620	
b Beans.	621	
c Potatoes.	622	
176 Gualeguaychu Sub-commission, Province of Entre-Rios.—Wheat, corn, and beans.	620	
177 Goyri, B., Province of Entre-Rios.—Corn.	620	
178 Balujera, Domingo, Province of Entre-Rios.—Rice.	620	
179 Crespo, Manuel, Province of Entre-Rios.—Paraná wheat.	620	
180 Uruguay and Paraná Commission, Province of Entre-Rios.—Collection of seeds and cereals.	620	
181 Meyer, Edmundo, Province of Santa Fé.—Wheat and barley.	620	
182 Ceretti, L., Province of Santa Fé.—Wheat.	620	
183 Lubary, T., Province of Santa Fé.—Wheat.	620	
184 Colonia San Carlos Sub-commission, Province of Santa Fé.—Barley.	620	
185 Nickisch, Manuel, Province of Santa Fé.—Corn, Lima beans, etc.	621	
186 Iturrapse Co., Province of Santa Fé.—Wheat.	620	
187 Bergeré, Dr., Province of Santa Fé.—Peanuts.	620	
188 Blanchaud, Miguel, Province of Santa Fé.—Peanuts, chic-pea, corn, and wheat.	620	
189 Beken, Federico, Province of Santa Fé.—Wheat.	620	
190 Senhling, German, Province of Santa Fé.—Corn.	620	
191 Pillier, N., Province of Santa Fé.—Wheat.	620	
192 Carignano Bros., Province of Santa Fé.—Wheat.	620	
193 Vaivas, Carlos, Province of Santa Fé.—Wheat.	620	
194 Provincial Commission, Province of Santa Fé.—Dry lucern, corn.	620	
195 Frisch, Celestino, Province of Santa Fé.—Wheat.	620	
196 Arminchiardy, Juan, Province of Mendoza.—Wheat.	620	
197 Fourcade, Pedro, Province of Mendoza.—Wheat.	620	
198 De la Cruz Videla, Juan, Province of Mendoza.—Wheat.	620	
199 Roman, Medardo, Province of Mendoza.		
a Wheat.	620	
b Lima beans.	621	
200 Sanchez, Modesto, Province of Mendoza.—White Lima beans, striped peas.	621	
201 Provincial Commission, Province of Mendoza.—Corn.	620	
202 Agricultural Villa of Mendoza, Province of Mendoza.		
a Corn and wheat.	620	
b Lima beans and peas.	621	

AGRICULTURE.

Animal and Vegetable Products.

308 Provincial Commission, Province of Buenos Ayres. —Sea-lion skin, ox and colt hide.	652	332 Andalgalá Sub-commission, Province of Catamarca. —Vicugna, alpaca, gray fox, lamb skins, leather, etc.	652
309 Valdez, Emiliano, Province of Buenos Ayres. —Lion-skin, colt, and ox-hides.	652	333 Vergara, Altillo, Province of Catamarca. —Swan skin.	652
310 Fuenté, Diego G. de la, Province of Buenos Ayres. —Aguara skin.	652	334 Tinogasta Sub-commission, Province of Catamarca. —Lion, chinchilla, fox, wild-cat, ferret, and wild-boar skins.	652
311 Berrotaran, Juan, Province of Buenos Ayres. —Lamb skins.	652	335 Medina, J., Province of Catamarca. —Ampalagua skin.	652
312 Duguit, Tomás, Province of Buenos Ayres. —Sheepskins.	652	336 Santa María Sub-commission, Province of Catamarca. —Vicugna, chinchilla, and fox skins.	652
313 Gomez, Lorenzo, Province of Buenos Ayres. —Flamingo skin from La Laguna de los Padres (Balcarce).	652	337 Pachin Sub-commission, Province of Catamarca. —Wildcat, ferret, guana skins, etc.	652
314 Mora, J., Province of Buenos Ayres. —Sheepskin.	652	338 Belen Sub-commission, Province of Catamarca.	
315 Acuña, P. García, Province of Buenos Ayres. —Cow tripe prepared for export.	652	<i>a</i> Alpaca and vicugna skins.	652
316 Battini, Angel Pedro, Province of Buenos Ayres. —Leather soles.	652	<i>b</i> White wine.	660
317 Duportal, Emilio, Province of Buenos Ayres. —Skins.	652	339 Provincial Commission, Province of Tucuman.	
318 Arnault, Augusto, Province of Buenos Ayres. —Domestic cat-skins for the cure of rheumatism.	652	<i>a</i> Skins and leather	652
319 Escalada & Co., Buenos Ayres. —Tanned and colored kid skins for gloves.	652	<i>b</i> Wheat starch.	658
320 Bernard, Joaquin, Province of Buenos Ayres. —Sheep and lamb skins.	652	<i>c</i> Sugar.	659
321 Belloco Bros., Province of Buenos Ayres. —Calf skins.	652	<i>d</i> Biscuits.	661
322 Iniguez, A. Manuel, Province of Buenos Ayres. —Charcoal of curumuel wood.	652	340 Provincial Commission, Province of Entre-Ríos. —Swan and deer skins.	652
323 Jacquemard, Victor, Province of Buenos Ayres. —Animal charcoal.	652	341 Victoria Sub-commission, Province of Entre-Ríos. —Chajá skin.	652
324 Mujica, E. S., Province of Buenos Ayres. —Prepared blood for refining sugar and clarifying syrups.	652	342 Benites, A., & Co., Province of Entre-Ríos.	
325 Gauthier, Adolfo, Province of Buenos Ayres. —Tallow.	652	<i>a</i> Grease.	652
326 Santillan Bros. & Co., Province of Santiago del Estero. —Leather for boots and lizard leather for gaiters; skins, etc.	652	<i>b</i> Wax and honey.	654
327 Gelos, Martin, Province of La Rioja. —Wild-boar skins.	652	<i>c</i> Preserved meats, beef extracts, etc.	656
328 Gonzalez, Joaquin, Province of La Rioja. —Lion, vicugna, and ai-aiskins.	652	343 Allurralde, Punte y Carril, Province of Entre-Ríos. —Horse hide.	652
329 Provincial Commission, Province of La Rioja.		344 Darchez, Amadeo, Province of Entre-Ríos. —Sea-wolf, fox, wildcat, and otter skins, etc.	652
<i>a</i> Leather, lion, goat, vicugna, and other skins, etc.	652	345 Barcos, Pedro P., Province of Entre-Ríos. —Coati skin.	652
<i>b</i> Dried peaches, raisins, and pressed olives.	656	346 Rosario Sub-commission, Province of Entre-Ríos. —Buck, otter, ferret, coati, lion, fox, weasel, wildcat skins, etc.	652
<i>c</i> Starch.	658	347 Victoria Sub-commission, Province of Entre-Ríos. —Skins.	652
<i>d</i> Nonogasta syrup.	659	348 Alurralde, Rodolfo, Province of Entre-Ríos. —Wildcat skin.	652
<i>e</i> Wine and brandy.	660	349 De la Puento, Gregorio, & Del Carril, Pedro A., Province of Entre-Ríos. —Sea-wolf, horse, deer skins, etc.	652
330 Commission of the Chaco Argentine Territory.		350 Provincial Commission, Province of Entre-Ríos. —Wildcat, fox, otter skins, etc.	652
<i>a</i> Tiger, wolf, deer, cat, and lion skins, etc.	652	351 Fontes, Vicente, and Neyra, Sixto, Province of Entre-Ríos. —Tiger, lion, wolf, fox, ferret, otter, rabbit, wildcat, and weasel skins.	652
<i>b</i> Mandioca starch for making chipa bread.	653	352 Goyri, Bernardo, Province of Entre-Ríos. —Fox and weasel skins.	652
<i>c</i> Guaviranú liquors, sugar cane and orange juices.	660	353 Maglione, Francisco, Province of Entre-Ríos. —Carpincho and deer skins.	652
331 Provincial Commission, Province of Catamarca.		354 Ceballos, Desiderio, Province of Salta. —Soles, black and morocco leather.	652
<i>a</i> Skins, leather, etc.	652	355 Saenz, Victoriano, Province of Salta. —Tiger skin.	652
<i>b</i> Lime and orange sweetmeats.	656	356 Zorrilla, Benjamin, Province of Salta. —Llama skin.	657
<i>c</i> Flour.	657		

Animals, Animal and Vegetable Products.

Land Animals.

- 258 Provincial Commission, Province of Mendoza.**—Collection of birds. 635
259 Lemon, Abraham D., Province of Mendoza.—Hawk, woodpecker, wild sandpiper. 635
260 Nuñez, Santos, Province of Catamarca.—Humming-bird. 635
261 Franco, Luis A., Province of Catamarca.—Humming-bird. 635
262 Poblete, Tiburcio, Province of San Juan.—Ostrich skin. 635
263 Provincial Commission, Province of San Juan.—Prepared skins of terntern, partridge, himango, craw birds, etc. 635
264 Dominguez, José, Province of San Juan.—Prepared skins of banduria. 635
265 Rosario Sub-commission, Tala, Province of Entre-Ríos.—Stuffed gull. 635
266 Goyri, Bernardo, Province of Entre-Ríos.—Nest of boyero, wild bird of Gualguaychu. 635
267 Commission of the Province de San Luis.—Nest of hornero. 635
268 Provincial Commission, Province de Catamarca.
 a Mataco and quirquincho shells. 635
 b Wasp's nest. 638
269 Echeveria, Gabriel, Province of Buenos Ayres.—A stuffed wildcat of Balcarce. 637
270 Gonzalez, Juan, Province of Buenos Ayres.—Wildcat and small fox, stuffed. 637
271 Valdés, Emiliano, & Cipriano, Province of Buenos Ayres.—Mouse, stuffed. 637
272 Rosario Sub-commission, Province of Entre-Ríos.—Stuffed fox. 637
273 Lemos, Abraham, Province of Mendoza.
 a Lynx, stuffed mataco, etc. 637
 b Lizard, insects, scorpion, etc. 638
274 Echavarria, Cecilio, Province of Santa Fé.—Vipers 638
275 Commission of the Chaco Argentino Territory.—Rattlesnake and coral viper. 638
276 Provincial Commission, Province of Corrientes.—Euriyú viper's skin. 638
277 Fernandez, Severo, Province of Corrientes.—Viper's skin. 638
278 Fava, Carlos, Province of Corrientes.—Viper's skin. 638
279 Poisson, Juan F. Province of Corrientes.—Viper's skin. 638
280 Bella Vista Sub-commission, Province of Corrientes.—Spiders and their silk in cocoons, vipers. 638
281 Gonzalez, Pedro J., Province of Corrientes.—Dissected guana (South American lizard). 638
282 Diaz, Eulogia, Province of Corrientes.—Stuffed viper. 638
283 Jurado, G. Doraliza de, Province of San Luis.—Black wasp's comb. 638
284 Escobar, Juan de D., Province of San Luis.—Guana lizard skin. 638
285 Provincial Commission, Province of San Luis.—Lizard skin. 638
286 Laborda, Franklin, Province of San Luis.—Insects. 638

- 287 Day, Edmundo, Province of Mendoza.**—Viper. 638

- 288 Sanchez, Modesta, Province of Mendoza.**—Viper. 638
289 Iñiguez, M. A., Province of Buenos Ayres.—Vipers in alcohol. 638

Water Animals, Fish Culture and Apparatus.

- 290 Provincial Commission, Province of Corrientes.**—Shells. 645
291 Arteaga, Amancio, Province of Santa Fe.—Shells. 645
292 Provincial Commission, Province of San Juan.—Baskets. 647
293 Machado, Ruben, Province de Catamarca.—Basket of albe straw. 647
294 Provincial Commission, Province of Salta.—Fishing-lines, etc. 647

Animal and Vegetable Products.

- 295 Paraná Commission, Province of Entre-Ríos.**
 a Sponges. 650
 b Colt-grease, shad-oil, leather, skins, etc. 652
 c Ostrich feathers. 653
 d Sausage. 656
 e Domestic beer, lemonade, and wine. 660
296 Provincial Commission, Province of Salta.
 a Cheese. 651
 b Viper, vicugna, lion, chinchilla, and other skins; soles. 652
 c Honey and wax. 654
 d Dried peaches and nuts. 656
 e Wheat flour. 657
 f Mandioca and wheat starch. 658
 g Querosilla and sugar-cane syrups. 659
 h Aguardiente brandy. 660
297 Dubois, B. B., Province of Entre-Ríos.—Cheese. 651
298 Vasquez, Lucrecio, Province of Corolita.—Achala cheese. 651
299 Vailard, Hipolito, Province of Santa Fé.—Cheese. 651
300 Provincial Commission, Province of San Luis.
 a Butter. 651
 b Lion, hare, fox, buck, otter, and heron skins. 652
 c Eggs, condor and ostrich feathers. 653
 d Palpa and honey syrups. 659
301 Sola, Juan, Province of Salta.
 a Cheese. 651
 b Paisaraná, fruit of the Indian fig. 656
302 Linares, Callisto, Province of Salta.
 —Cheese. 651
303 Arias, Franciscano, Province of Buenos Ayres.—Sheepskin. 652
304 Justice of the Peace of Patagones, Province of Buenos Ayres.
 a Sheepskins. 652
 b Ostrich feathers. 653
 c Cherry liqueur and Chacoli wine. 660
305 Balcarce, German, Province of Buenos Ayres.—Sheep, goat, wild boar, otter, deer, weasel, wolf, and wild cat skins, etc. 652
306 Martinez, Luiz, Province of Buenos Ayres.—Hides. 652
307 Fraguero, G., Province of Buenos Ayres.—Otter and sheepskins. 652

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Animal and Vegetable Products.

357 Carreras, Segundo, Province of Mendoza. —Lion skin.	652	377 Echevarria, Cecilio, Province of Santa Fé.	
358 Provincial Commission, Province of Mendoza.		<i>a</i> Wolf, lion, tiger, fox, ostrich, and other skins.	652
<i>a</i> Fox skins.	652	<i>b</i> Wax.	654
<i>b</i> Ostrich feathers.	653	<i>c</i> Wild fruit, preserved.	656
<i>c</i> Dried peaches, sweatmeats, preserved lemons, etc.	656	<i>d</i> Sugar-cane brandy.	660
359 Gomez, Cecilio, Province of Mendoza. —Chancho wild-boar skin.		378 Provincial Commission, Province of Santa Fé.	
360 Ribero, Jacinto, Province of San Luis. —Wildcat skins.	652	<i>a</i> Wolf, lion, goat, otter, hare, fox, deer skins, etc.	662
361 Sierra, Ramon de la, Province of San Luis. —Aguará purse and occiput of an ostrich.	652	<i>b</i> Sweetmeats.	656
362 Lahiton, Pedro, Province of San Luis. —Tanned hides.	652	379 Martinez, Jonas, Province of Catamarca. —Ostrich feathers.	653
363 Ladies' Commission, Province of San Luis.		380 Suarez, E., Province of Santa Fé. —Ostrich feathers.	653
<i>a</i> Peach preserve, plum, melon, peach, lemon, water-melon, and quince sweetmeats, etc.	656	381 Soler, Ventura, Province of Entre-Ríos. —Ostrich feathers.	653
<i>b</i> Lemon and orange liquors.	660	382 Maxet, José, Province of Entre-Ríos. —Honey.	654
364 Rodriguez, Severo, Province of San Juan.		383 Ivernizzi, J., & Toschini, J., Province of Entre-Ríos. —Wax.	654
<i>a</i> Tanned goat skin.	652	384 Otero, José, Province of Buenos Ayres. —Honey and wax.	654
<i>b</i> Musk and peeled raisins.	656	385 Barraquero, Carmen, Province of Mendoza.	
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365 Vidart, Juan A., Province of San Juan. —Lina hide.	652	<i>b</i> Preserves.	656
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EXHIBITIONS OF LIVE STOCK.

1. The live stock display at the International Exhibition will be held within the months of September, October, and November, 1876; the periods devoted to each family being as follows: Horses, mules, and asses, from September 1st to 14th. Dogs from September 1st to 8th. Horned cattle, from September 21st to October 4th. Sheep, swine, and goats, from October 10th to 18th. Poultry will be exhibited from October 27th to November 6th.

2. Animals to be eligible for admission to the International Exhibition must be, with the exception of trotting stock, walking horses, matched teams, fat and draught cattle, of such pedigree that the exhibitor can furnish satisfactory evidence to the Chief of Bureau, that as applied to thorough-bred horses, as far back as the fifth generation of ancestors on both sides, they are of pure blood and of the same identical breed. As to short-horned cattle, they are registered in either Allen's, Alexander's, or the English herd-books. As to Holsteins, Herefords, Ayrshires, Devons, Guernseys, Brittanys, Kerrys, and other pure breeds, they are either imported or descended from imported animals on both sides. As to Jerseys, they are entered in the Herd Register of the American Jersey Cattle Club, or in that of the Royal Agricultural Society of Jersey. As to sheep or swine they are imported or descended from imported animals, and that the home-bred shall be of pure blood as far back as the fifth generation.

3. The term breed, as used, is intended to comprehend all family divisions, where the distinction in form and character dates back through years of separation; for instance, it is held that the progeny of a pure-blood Jersey and a pure-blood Guernsey is not a thoroughbred but a cross-bred animal, and, as such, is necessarily excluded.

4. In awarding prizes to animals of pure blood, the judges will take into consideration chiefly the relative merits as to the power of the transmission of their valuable qualities; a cardinal object of the Exhibition being to promote improvement in breeding stock.

5. In case of doubt relative to the age of an animal, satisfactory proof must be furnished or the animal will be subject to examination by a veterinary surgeon; and should the state of dentition indicate that the age has not been correctly stated, the person so entering as an exhibitor will be prohibited from exhibiting in any class.

6. The forms of classification for awards, as given under each head, are intended (except in the case of trotting stock, walking horses, matched teams, fat and draught cattle) to apply to the animals of any pure breed that are entered for competition.

7. The Exhibition being open to the world, it is of the first importance that the best of their kind only be brought forward, as the character of the stock will be judged by the general average of those exhibited.

8. Exhibitors will be expected to furnish their own attendants, on whom all responsibility of the care of feeding, watering, and cleaning the animals, and also of cleaning the stalls, will rest.

9. Forage and grain will be furnished at cost prices, at depots conveniently located within the grounds. Water can be had at all hours, ample facilities being provided for its conveyance and distribution throughout the stock yards.

10. Exhibitors must supply all harness, saddleery, vehicles, and other appointments, and all such must be kept in their appointed places.

11. The Commission will erect ample accommodation for the exhibition and protection of live stock, yet contributors who may desire to make special arrangements for the display of their stock, will be afforded facilities at their own cost. Fractious animals, whether stallions, mares with foals, or bulls, will be provided with stalls of suitable character.

12. All stalls will be regularly and distinctly numbered; corresponding numbers on labels of uniform character will be given to each exhibitor, and no animal will be allowed to pass from its stall without its proper number attached.

13. Numbers alone will distinguish stock in the show yards, preceding the awards of prizes.

14. The judges of live stock will make examination of all animals on the opening day of each serial show, and will for that day have exclusive entrance to the show yard.

15. No premium will be awarded an inferior animal, though there be no competition.

16. All animals will be under the supervision of a veterinary surgeon, who will examine them before admission, to guard against infection, and who will also make a daily inspection and report. In case of sickness the animal will be removed to a suitable inclosure especially prepared for its comfort and medical treatment.

17. When animals are taken sick, the exhibitors may either direct the treatment themselves, or allow the veterinary surgeon appointed by the Commission to treat the case. In this latter event the exhibitor will be charged for all expenses incurred. All possible care will be taken of animals exhibited, but the Commission cannot be held responsible for any injury or accident.

18. A ring will be provided for the display and exercise of horses and cattle.

19. On the last day of each serial show, a public auction may be held of such animals as the exhibitors may desire to sell. Animals may be sold at private sale at any time during their exhibition. During the period of a serial show, no animal, even in the event of being sold, will be allowed to be definitely removed.

20. An official catalogue of the animals exhibited will be published.

21. Exhibitors of thoroughbred animals must, at the time of making their entries, file with the Chief of the Bureau a statement as to their pedigree, affirmed or sworn to before an officer authorized to take affidavits, and the papers so filed shall be furnished to the Jury of Experts.

22. The ages of live stock must be calculated up to the opening day of the exhibition of the class to which they belong.

23. Sheep breeders, desiring to exhibit wool, the produce of the flocks, will display not less than five fleeces.

24. All animals must be entered according to the prescribed rules as given in forms of entry, which forms will be furnished on application to the Chief of the Bureau of Agriculture.

BREEDING HORSES.

Mares entered as breeding animals must have had foals within one year of the show, or if in foal, certificates must be furnished to that effect.

All foals exhibited must be the offspring of the mare with which they are at foot.

Awards will be made to respective breeds for pure bred turf stallions, six years and over; pure bred turf stallions, over four years and under six years; pure bred turf stallions, over two years and under four years; pure bred turf mares, six years and over; pure bred turf mares, over two and under six years.

Awards will be made for trotting stallions, six years and over; trotting stallions, over four years and under six; trotting stallions, over two years and under four; pure bred draught stallions, six years and over; pure bred draught stallions, over four years and under six years; pure bred draught stallions, over two years and under four years; pure bred draught mares, six years and over; pure bred draught mares, over two and under six years; trotting brood mares, six years and over; trotting fillies, over four years, and under six; trotting fillies, over two years and under four.

RUNNING AND TROTTING HORSES

Shall be judged according to their record up to August 15th, 1876, due regard being had to present condition.

Awards will be made for running horses having made fastest record; trotting stallions having trotted a mile within two-thirty; mares and geldings having trotted a mile within two-twenty-five.

WALKING HORSES.

Fast-walking horses, whether bred for agricultural purposes or the saddle, will compete in the ring for awards.

MATCHED TEAMS.

Awards will be made for matched teams having trotted a mile in two-thirty-five; matched stallions for heavy draught, over sixteen hands high, and over fifteen hundred pounds weight each; matched geldings for heavy draught, over sixteen hands high, and over fifteen hundred pounds weight each; matched mares for heavy draught, over fifteen hands high, and over fourteen hundred pounds weight each; matched mules for heavy draught, over fifteen and a half hands high, and over thirteen hundred pounds weight each.

BREEDING ASSES.

Awards will be made to respective breeds of pure bred jacks over six years; pure bred jacks over three years and under six; pure bred she-asses over six years; pure bred she-asses over three years and under six.

NEAT CATTLE.

No cow will be eligible for entry unless accompanied with a certificate that, within fifteen months preceding the show, she had a living calf, or that the calf, if born dead, was born at its proper time. No heifer entered as in calf will be eligible for a prize unless accompanied with a certificate that she had been bulletted before the first of April, or presents unmistakable proof of the fact to the judges. No bull above one year old can be entered unless he have a ring in nose, and the attendant be provided with a leading stick, which must be used whenever the animal is taken out of stall.

Awards will be made for the best herd of each respective breed, consisting as follows: one bull, four cows, none under fifteen months.

Neat cattle, of each respective breed, will compete individually for awards: bulls, three years and over; bulls over two years and under three years; bulls over one year and under two years; cows four years and over; cows over three and under four years; cows or heifers in calf, over two years and under three years; yearling heifers. A sweepstake award will be made for the best bull of any breed. A sweepstake award will be made for the best cow of any breed.

FAT AND DRAUGHT CATTLE.

Animals entered as fat and draught cattle need not be of pure blood, but will compete on individual merits. Fat cattle must be weighed, and in general those will be judged best which have the greatest weight with the least surface and ossia.

Awards will be made for best fatted steer of any age and breed; best fatted cow of any age or breed; most powerful yoke of oxen; most rapidly walking yoke of oxen; most thoroughly trained yoke of oxen; most thoroughly trained team of three or more yokes of oxen.

BREEDING SHEEP.

All sheep offered for exhibition must be accompanied with certificate to the effect that they have been shorn since the first of April, and the date given. If not fairly shorn, or if clipped so as to conceal defects, or with a view to improve the form or appearance, they will be excluded from competition.

Awards will be made to respective breeds for the best pen of five animals of same flock and including one ram, the ewes all having had living lambs the past spring.

Awards will be made to respective breeds for rams two years and over; shearing rams.

A sweepstake award will be made for the best ram, respectively of long, middle, and fine wooled breeds.

Awards will be made to respective breeds for ewes in pens of three, all having had living lambs; shearlings in pens of three.

A sweepstake award will be made for the best pen of three breeding ewes, respectively of long, middle, and fine wooled breeds.

FAT SHEEP.

Fat sheep entered for competition must be weighed, and in general those will be judged best which have the greatest weight, with the least surface and ossia.

Awards will be made for pen of three best fatted sheep of each breed; pen of three best fatted sheep of any breed.

BREEDING SWINE.

Every competing sow above one year old must have had a litter, or be in pig, and the owner must bring proof of these facts if required. If a litter of pigs be sent with a sow, the young pigs must be sucklings, the offspring of the sow, and must not exceed the age of three months.

EXHIBITIONS OF LIVE STOCK.

Awards will be made to respective breeds for the best pen of one boar and two breeding sows; for pen of sow and litter.

Awards will be made to respective breeds for boars two years old and over; boars one year old and under two years; boars between nine months and one year; breeding sows two years old and over; breeding sows one year old and under two years; pen of three sow pigs between nine months and one year.

A sweepstake award will be made for the best boar of any breed. A sweepstake award will be made for the best sow of any breed.

FAT SWINE.

Fat swine entered for competition must be weighed, and, in general, those will be judged best which have the greatest weight, with the least surface and offal.

Awards will be made for pairs of best fatted hogs of each breed; pairs of best fatted hogs of any breed.

DOGS.

Benches will be furnished free of charge. Exhibitors may themselves assume the cost of attendance upon their animals, but to provide for them who cannot conveniently attend the Exhibition, the Commission will assume the expenses of feeding and daily care, upon the payment of an attendance charge of three dollars upon each animal.

Awards will be made to respective breeds for dogs of two years and over; dogs of one year and under two; pups.

A sweepstake award will be made for the best dog of any breed displayed by a foreign exhibitor. A sweepstake award will be made for the best home-bred dog of any breed.

Awards will be made to respective breeds for bitches of two years and over; bitches of one year and under two; bitch pups.

A sweepstake award will be made for the best bitch of any breed displayed by a foreign exhibitor. A sweepstake award will be made for the best home-bred bitch of any breed.

POULTRY.

Poultry can only be exhibited in coops made after specifications furnished by the Bureau of Agriculture. The Commission will furnish coops and attendance upon payment of one dollar on each bird of the gallinaceous division, and two dollars on each pair of the aquatic division.

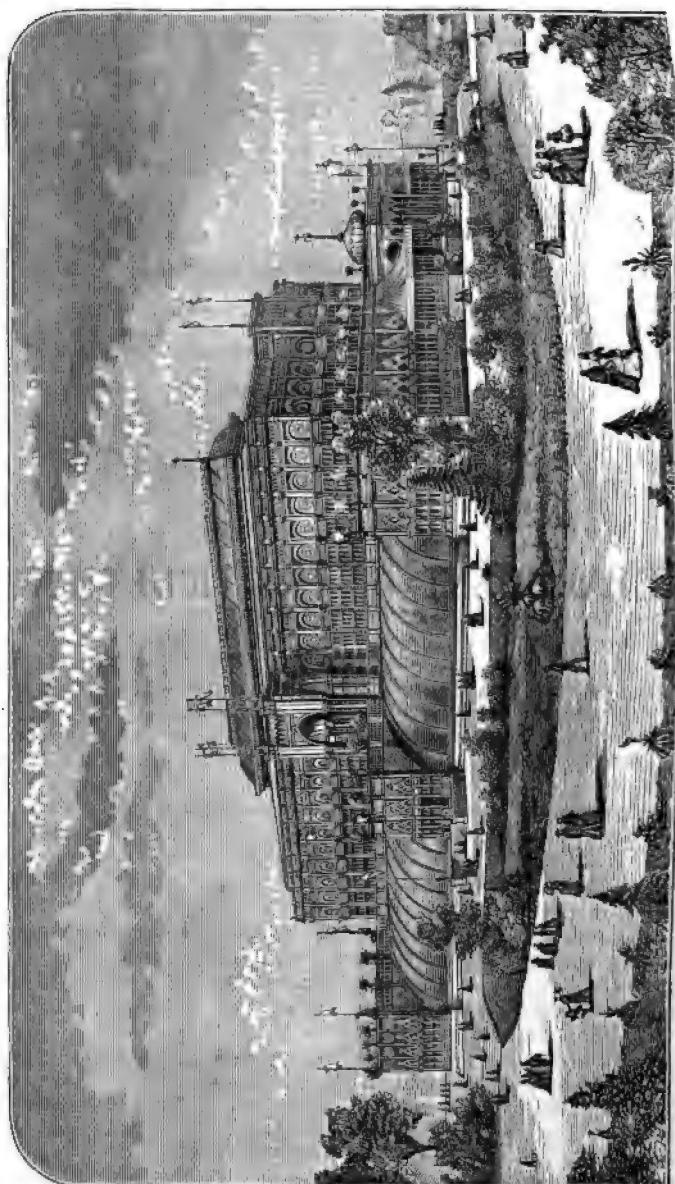
Awards will be made to respective breeds for pairs of one year and over, of chickens, turkeys, ducks, geese, swans, pigeons, guineas, and ornamental birds; for pairs under one year.

FISH.

Living fishes will be displayed in both fresh and salt water aquaria.

Awards will be made for largest display of fish of each species; largest display of fish of all species.

DEPARTMENT OF HORTICULTURE.



HORTICULTURAL HALL. No. 160.

Size 383 by 193 feet.

Architect, H. J. SCHWARZMAN.

Contractor, JOHN RICE, Philadelphia.

Wrought iron furnished by KEYSTONE BRIDGE COMPANY, Pittsburgh, Pa.

Cast iron furnished by SAMUEL J. CRESSWELL, Philadelphia.

Painting by JOSEPH CHAPMAN, Philadelphia.

Masonry by MOORE & SCATTERGOOD, Philadelphia.

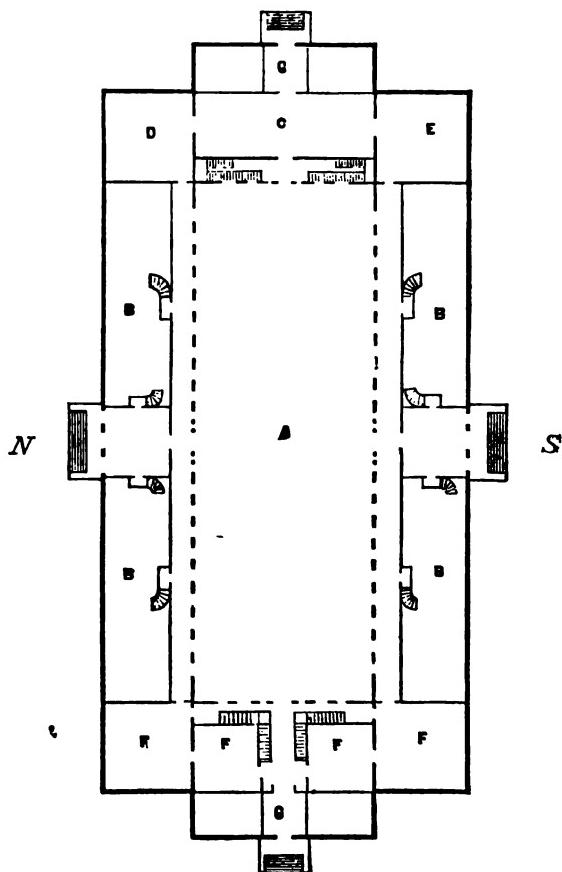
APPROPRIATIONS of the City of Philadelphia have provided the Horticultural Building, which is to remain in permanence as an ornament of Fairmount Park. It is on the Lansdowne Terrace, a short distance north of the Main Building and Art Gallery, and has a commanding view of the Schuylkill river and the northwestern portion of the city. The design is in the Moorish style of architecture of the twelfth century, the principal materials externally being iron and glass. The main floor is occupied by the central conservatory, 230 by 80 feet, and 55 feet high, surmounted by a lantern 170 feet long, 20 feet wide, and 14 feet high. Running entirely around this conservatory, at a height of 20 feet from the floor, is a gallery 5 feet wide. On the north and south sides of this principal room are four forcing houses for the propagation of young plants, each of them 100 by 30 feet, covered with curved roofs of iron and glass. Dividing the two forcing houses in each of these sides is a vestibule 30 feet square. At the centre of the east and west ends are similar vestibules, on either side of which are the restaurants, reception room, offices, etc. From the vestibules ornamental stairways lead to the internal galleries of the conservatory, as well as to the four external galleries, each 100 feet long and 10 feet wide, which surround the roofs of the forcing houses. These external galleries are connected with a grand promenade, formed by the roofs of the rooms on the ground floor, which has a superficial area of 1800 square yards.

The east and west entrances are approached by flights of blue marble steps from terraces 80 by 20 feet, in the centre of each of which stands an open kiosque 20 feet in diameter. The angles of the main conservatory are adorned with eight ornamental fountains. In the basement, which is of fireproof construction, are the kitchen, storerooms, coal-houses, ash-pits, heating arrangements, etc.

The ground was graded and the foundations of Horticultural Hall laid on May 1st, 1875. The building was finished April 1st, 1876. It covers an area for exhibition purposes of 122,500 square feet, and cost about \$300,000. This building will be permanent.

HORTICULTURAL HALL.

Scale, 80 ft. to 1 in.



A *Floral Hall.*
B *Greenhouse.*

C *Restaurant.*
D *Ladies' Room.*

E *Gentlemen's Room.*
F *Offices.*

G *Kiosque.*
H *Vestibule.*

Total Length, 350 ft. Width, 180 ft. Height, 65 ft.

CLASSIFICATION.

DEPARTMENT VII.—HORTICULTURE.

ORNAMENTAL TREES, SHRUBS, AND FLOWERS.

- CLASS 700.—Ornamental trees and shrubs, evergreens.
CLASS 701.—Herbaceous perennial plants.
CLASS 702.—Bulbous and tuberous rooted plants.
CLASS 703.—Decorative and ornamental foliage plants.
CLASS 704.—Annuals and other soft-wooded plants, to be exhibited in successive periods during the season.
CLASS 705.—Roses.
CLASS 706.—Cactaceæ.
CLASS 707.—Ferns, their management in the open air and in ferneries, wardian cases, etc.
CLASS 708.—New plants, with statement of their origin.
CLASS 709.—Floral designs, etc.—Cut flowers, bouquets, preserved flowers, leaves, seaweeds. Illustrations of plants and flowers.—Materials for floral designs. Bouquet materials, bouquet holders, bouquet papers, models of fruits, vegetables, and flowers.

HOTHOUSES, CONSERVATORIES, GRAPERIES, AND THEIR MANAGEMENT.

- CLASS 710.—Hothouse and conservatory plants.
CLASS 711.—Fruit trees under glass.
CLASS 712.—Orchids and parasitic plants.
CLASS 713.—Forcing and propagation of plants.
CLASS 714.—Aquatic plants under glass, or in aquaria, etc.
CLASS 715.—Horticultural buildings, propagating houses, hotbeds, etc., and modes of heating them. Structures for propagating and forcing small fruits.
CLASS 716.—Portable or movable orchard houses and graperies, without artificial heat. Frames, beds.

GARDEN TOOLS, ACCESSORIES OF GARDENING.

- CLASS 720.—Tools and implements.—Machines for the transplanting of trees, shrubs, etc. Portable forcing pumps, for watering plants in greenhouses and methods of watering the garden and lawn.
CLASS 721.—Receptacles for plants.—Flower pots, plant-boxes, tubs, fern cases, jardinières, etc. Window gardening. Plant and flower stands, ornate designs in iron, wood, and wire.
CLASS 722.—Ornamental wirework, viz.: fences, gates, trellis bordering of flower beds, porches. Park seats, chairs, garden statuary, vases, fountains, etc. Designations, labels, numbers.

GARDEN DESIGNING, CONSTRUCTION, AND MANAGEMENT.

- CLASS 730.—Laying out gardens.—Designs for the laying out of gardens, and the improvement of private residences. Designs for commercial gardens, nurseries, graperies. Designs for the parterre. Books on gardening.
CLASS 731.—Treatment of water for ornamental purposes, cascades, fountains, reservoirs, lakes.
CLASS 732.—Formation and after-treatment of lawns.
CLASS 733.—Garden construction, buildings, etc.—Rockwork, grottoes. Rustic constructions and adornments for private gardens and public grounds.
CLASS 734.—Planting, fertilizing, and cultivating.



UNITED STATES.

Trees, Shrubs, Flowers, Hot-House Plants.

- Ornamental Trees, Shrubs, Flowers, and Floral Designs.**
- 1 Wharton, Joseph, Philadelphia, Pa.—*Eucalyptus globulus*. 700
 - 2 Lovering, Joseph S., Philadelphia, Pa.—Decorative foliage, plants, etc. 703
 - 3 Graham, Hugh, Philadelphia, Pa.
a Decorative and ornamental foliage plants, palms, etc. 703
b Begonias, soft-wooded plants, etc. 704
c Ferns, in collection, floral designs, and cut flowers. 709
 - 4 Pennock Brothers, Philadelphia, Pa.
a Foliage plants. 703
b Cut-flower designs. 709
 - 5 The Misses Richardson, Philadelphia, Pa.—Cactus. 706
 - 6 Fitzgerald, R., Philadelphia, Pa.—Cactus. 706
 - 7 Miller & Sievers, San Francisco, Cal.
a Collection of Pacific coast cactus. 706
b Collection of ferns. 707
 - 8 Such, George, South Amboy, N. J.
a Decorative and ornamental foliage plants. 703
b Cactus, in collection. 706
c New plants. 708
 - 9 Moon, Mahlon, & Son, Morrisville, Pa.—Collection of ferns. 707
 - 10 Dick, John, Philadelphia, Pa.
a Cactus. 706
b Ferns. 707
c Floral designs, cut flowers, bouquets, etc. 709
 - 11 Miller & Hayes, Philadelphia, Pa.—Tree ferns from Australia. 707
 - 12 Parsons, S. B., & Sons, Flushing, N. Y.
a Varieties of ferns. 707
b Skeleton plants. 709
 - 13 Sturtevant, Edmund D., Borden-town, N. J.—Ferns. 707
 - 14 Saunders, William, Washington, D. C.—New and rare plants. 708
 - 15 Freeman, J. R., Georgetown, D. C.—Seedling begonia (large leaved species). 708
 - 16 Dreer, Henry A., Philadelphia, Pa.—Floral designs, ferns in ferneries and in wardian cases. 707
 - 17 Henderson, Peter, New York, N. Y.—Wire designs for cut flowers, bouquet papers, and materials. 709
 - 18 Marot, Charles H., Philadelphia, Pa.—“The Gardener’s Monthly.” 709
 - 19 Parisian Flower Co., New York, N. Y.—Artificial tropical leaf-plants and bouquets. 709
 - 20 Kresken, H. Acosta, Cincinnati, Ohio.—Preserved flowers, leaves, grasses, bouquets, baskets, crowns, etc. 709
 - 21 Cook, Mrs. O. A., San Francisco, Cal.—Preserved natural flowers. 709
 - 22 Rolker, August & Sons, New York, N. Y.—Preserved flowers and grasses, bouquet papers, tin foil, wire, frames, etc. 709
 - 23 Leopold, Emil L., New York, N. Y.—Fancy flower baskets, in straw, different shapes and styles. 709
 - 24 Le Moult, Adolphe, New York, N. Y.—Preserved flowers, representation of a lake with natural water lilies. 709
 - 25 Jansen, Edward, New York, N. Y.—Fancy flower baskets, imitation coral, white gilt, straw, brown willow, and fancy wire. 709
 - 26 Siebrecht, H. A., & Co., New York, N. Y.—Cut flowers, floral designs. 709
 - 27 Williamson, A. & H. A., Philadelphia, Pa.—Wax models of fruits, vegetables, flowers, ferns, autumn and foliage leaves. 709
 - 28 Moffatt, Isaac, Philadelphia, Pa.—Models of named American fruits, facsimile of choice specimens. 709
 - 29 Brossé, Madame S. C., San Francisco, Cal.—Collection of California sea mosses. 709
 - 30 Long Brothers, Buffalo, N. Y.—Floral designs representing the construction of monograms, initials, etc. 709
 - 31 Klag, Philip, New York, N. Y.—Preserved natural flowers. 709
- Hot-Houses, Conservatories, Graperies, and their Management.**
- 32 Saunders, William, Washington, D. C.—Collection of American economic plants. 710
 - 33 Graham, Hugh, Philadelphia, Pa.—Hot-house and conservatory plants, crottons, etc. 710
 - 34 Lovering, Joseph S., Philadelphia, Pa.—Hot-house and conservatory plants. 710
 - 35 Price, Stephen S., Philadelphia, Pa.—Hot-house and conservatory plants. 710
 - 36 Committee of the Congressional Library of the United States (Botanic Garden), Washington, D. C.—Official, medicinal, tropical, and semi-tropical plants. 710
 - 37 United States Agricultural Department, Washington, D. C.—Official and medicinal plants, mahogany, cocoa, chocolate, guava, papaw, rose apple, etc. 710
 - 38 Baldwin, Mrs. M. W., Philadelphia, Pa.—Hot-house and conservatory plants. 710
 - 39 Zoological Society, Philadelphia, Pa.—Australian tree fern. 710
 - 40 Bines, Samuel M., Philadelphia, Pa.—India rubber tree. 710

Hot-House Plants and Appliances, Gardening Implements.

- Garden Tools, Accessories of Gardening.**
- 68 Allen, R. H., & Co., New York, N.Y.**
—Comstock sower and horticultural tools. 720
- 69 Jones, John M., Palmyra, N.Y.**
Garden and floral hand cultivators. 720
- 70 Wheeler, W. F., Boston, Mass.**
Hose liquid distributor, watering pot, insect annihilator, for garden and field, liquid manure distributor. 720
- 71 Moon, Mahlon, & Son, Morrisville, Pa.**
 a Wheel hoe. 720
 b Vase. 721
 c Lead label. 722
- 72 Dreer, Henry A., Philadelphia, Pa.**
 a Tools and implements. 720
 b Receiptables for plants, fern cases, etc. 721
- 73 Bingham, O. A., Keene, N.H.**—Revolving flower stand. 721
- 74 Hews, A. H., & Co., North Cambridge, Mass.** Flower pots, hanging pots, ferneries, garden vases, etc. 721
- 75 Pierce, Mrs. M. R., New York, N.Y.**
—Window attachments and other improved flower stands with water receptacle, sprinkling pan, and draining saucer. 721
- 76 Chase, James, Rochester, N.Y.**
Combined aquarium, plant stand, bird cage, and fernery. 721
- 77 McClunie, Thomas, Hartford, Conn.**
—Drainer and evaporator with globe attachments for pots, vases and hanging baskets. 721
- 78 Rolker, August & Sons, New York, N.Y.**—Flower pots, boxes, fern cases, flower stands, etc. 721
- 79 Hills, George, Plainville, Conn.**
Flower stand with fountain attachment. 721
- 80 Perine, M., & Sons, Baltimore, Md.**
—Flower pots, stone and fancy earthenware. 721
- 81 Pennock Brothers, Philadelphia, Pa.**
—Wardian cases, ferneries with shades 721
- 82 Hess, John M., & Sons, Philadelphia, Pa.**—Chandelier designs with baskets, hanging baskets, hanging ferneries, vases, etc. 721
- 83 Freeman & Smith, Racine, Wis.**
 a Aquaria, ferneries, etc. 721
 b Iron furniture, lawn ornamental iron work. 722
- 84 Racine Hardware Co., Racine, Wis., New York, N.Y.**
 a Plant and flower stands, ferneries, aquaria, etc. 721
 b Fountains, vases, settees, etc. 722
- 85 Galloway & Graff, Philadelphia, Pa.**
 a Parlor vases, window boxes, pots, fern cases, baskets, etc. 721
 b Terra-cotta statuary, vases, tazzas, pedestals. 722
- 86 Page, W. H., & Co., Greenville, Conn.**
 a Plant stands. 721
 b Trellises. 722
- 87 Bauroth, Wirtz, Springfield, Ohio.**
 a Flower stand. 721
 b Lawn and garden wrought iron furniture. 722

Garden Ornaments, Designs, Tools, Ornamental Plants.

- 88 Balderston, George, Colora, Md.—** Sectional vases. 722
- 89 Henderson, Peter, Jersey City, N. J.** —Pot plant, garden and veranda trellises. 722
- 90 Harvey & Adamson, Philadelphia, Pa.—** Oriental and Japanese garden vases, statuary, etc. 722
- 91 American Fountain Works, New York, N. Y.—** Crystal fountains, self-acting. 722
- 92 J. L. Mott Iron Works, New York, N. Y.—** Garden statuary, vases, etc. 722
- 93 Sanguinetti, Percy A., Philadelphia, Pa.—** Glass-covered metallic labels, tree-protecting boxes. 722
- 94 Mayer, Charles, Baltimore, Md.—** Self-acting water fountain. 722
- 95 Bancroft, J. A., & Co., Philadelphia, Pa.—** Lawn settees. 722
- 96 Mueller, Quackenboss & Co., Philadelphia, Pa.—** Vases in artificial stone designs. 722
- 97 Brown, J. Morton, Philadelphia, Pa.—** Grape-vine trellises. 722
- 98 Moorhead Clay Works, Philadelphia, Pa.—** Terra-cotta vases. 722
- Garden Designing, Construction, and Management.**
- 99 Miller & Hayes, Philadelphia, Pa.—** Designs for laying out gardens and improving country residences. 730
- 100 Shove, Geo. A., Dighton, Mass.—** Designs for sanatorium. 730
- 101 Weidenmann, Jacob, New York, N. Y.—** Set of plans for beautifying and improving country homes; survey, drainage, planting, and general maps. 730
- 102 Heissinger, F. X., New York, N. Y.—** Designs for landscape gardening. 730
- 103 McClunie, Thomas, Hartford, Ct.** *a* Designs for laying out gardens, and the improvement of public grounds. 730
b Metallic lawn gutters, curb, and drain. 733
- Ornamental Trees, Shrubs, and Flowers.**
- 104 Bingham, Rudolphus, Camden, N. J.—** Water lilies. 702
- 105 Mackenzie, Thomas J., Philadelphia, Pa.—** Decorative foliage plants. 703
- 106 Dreer, Henry A., Philadelphia, Pa.** *a* Bulbous and tuberous-rooted plants. 702
b Ornamental foliage plants. 703
c Annuals and soft-wooded plants. 704
d Ferns, in ferneries and wardian cases. 707
- 107 Maginly, Thomas J., Philadelphia, Pa.** *a* Annuals and other soft-wooded plants. 704
b Roses, in collection. 705
- 108 Moon, Mahlon, & Son, Morrisville, Pa.** *a* Ornamental trees, shrubs, etc. 700
b Herbaceous plants. 701
c Gladiolus, dahlias, etc. 702
d Flowering and ornamental plants, etc. 703
e Soft-wooded plants. 704
f Roses, in collection. 705
g New plants. 708
- 109 Felton, A. L., Philadelphia, Pa.** *a* Herbaceous perennial plants. 701
b Bulbous and tuberous-rooted plants. 702
c Annuals and other soft-wooded plants. 704
- 110 Sturtevant Edmund D., Borden-town, N. J.** *a* Herbaceous plants. 701
b Ferns. 707
- 111 Such, George, South Amboy, N. J.** *a* Ornamental trees, shrubs, etc. 700
b Herbaceous perennial plants. 701
c Bulbous and tuberous-rooted plants. 702
- 112 Dick, John, Philadelphia, Pa.** *a* Ornamental trees, shrubs, etc. 700
b Decorative and ornamental plants. 703
c Soft-wooded plants. 704
d Roses. 705
e New plants. 708
- 113 Wilson, William C., Astoria (L. I.), N. Y.—** Plants for flower beds. 703
- 114 Henderson, Peter, Jersey City, N. J.** Geraniums and verbenas. 704
- 115 Meehan, Thomas, Philadelphia, Pa.** *a* Hardy trees and shrubs. 700
b New plants. 708
- 116 Zeller, Charles, Flatbush, N. Y.—** Monthly carnations. 701
- 117 Compondu, Louis F., New Brighton, N. Y.—** Passias. 708
- 118 Hance, A., & Son, Red Bank, N. J.—** New hardy ornamental plants and trees. 708
- 119 Parsons, S. B., & Sons, Flushing, N. Y.** *a* Deciduous trees, evergreens, and shrubs. 700
b New plants from Japan. 708
- 120 Hoopes, Bro. & Thomas, West Chester, Pa.** *a* Conifers. 700
b Ivies. 703
- 121 Parsons, R. B., & Co., Flushing, N. Y.** *a* Evergreen trees and shrubs, conifers, rhododendrons, kalmias, etc., deciduous trees, magnolias, azaleas, etc. 700
b Roses, in collection. 708
- 122 Miller & Hayes, Philadelphia, Pa.** *a* Ornamental trees and shrubs. 700
b Decorative plants. 703
c Roses, in collection. 705
- 123 Buist, Robert, Philadelphia, Pa.** *a* Ornamental trees and shrubs, abies and retinopora, from Japan. 700
b Roses, in collection. 705
c New plants; clematis veronica from Japan. 708
- 124 Moore, Samuel H., junior, Philadelphia, Pa.—** Fig tree. 700
- 125 Hexamer, F. M., New Castle, N. Y.** —Begonia Froebellii, a new bedding plant, Mont Blanc, a new hybrid. 708
- Garden Tools, Accessories of Gardening.**
- 126 Peck & Skilton, Westville, Conn.** *a* Rustic goods for house. 721
b Rustic goods for grounds. 722
- 127 Theodore, J. L., Mott Iron Works, New York, N. Y.—** Iron and zinc fountain. 722
- 128 Hanson, F. O., Philadelphia, Pa.—** Galvanized railing, fences, gates, seats, vases, etc. 722

Garden Ornaments, Accessories, and Designs.

129 Gossin, F., Philadelphia, Pa.—Terra-cotta vases.		722	Garden Designing, Construction, and Management.	
130 Mitchell, Wilson, Philadelphia, Pa.—Potsilica (artificial stone) fountain basins, vases, tiles, etc.		722	135 Sturtevant, Edmund D., Bordentown, N. J.—Rustic adornments.	
131 Walker, M., & Sons, Philadelphia, Pa.—Wrought-iron railing, ornamental gates, farm and hurdle fence, wirework 722		722	136 O'Brien Bros., Yonkers, N. Y.—Rustic summer-houses, etc.	
132 Brown, J. Morton, Philadelphia, Pa.—Grape-vine trellises.		722	137 Peck & Skilton, Westville, Ct.—Rustic buildings.	
133 O'Brien Bros., Yonkers, N. Y.—a Hanging baskets, etc.		721	138 Lebanon Building and Paving Block Company, Lebanon, Pa.—Building blocks of annealed slag paving.	
b Rustic gates, settees, chairs, stands, vases, etc.		722	139 Pacific Guano Co., Boston, Mass.—Machines, materials, staple products of the soil of the United States, specimen plants fertilized with guano.	
134 Moorhead Clay Works, Philadelphia, Pa.—Terra-cotta vases.		722		734

GREAT BRITAIN.

Ornamental Trees and Shrubs.

1 Veitch, James, & Sons, Royal Exotic Nursery, London.—Conifers, rhododendrons, hollies, and evergreens.	700	2 Waterer, Anthony, Knap Hill Nursery, Woking, Surrey.—Rhododendrons and azaleas (<i>in tent</i>).	700
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CANADA.

Gardening Appliances.

Garden Tools, Accessories of Gardening.		4 Welding, E., Brantford, Ont.—Flower-pots and saucers.	721
1 Wells, William, Beamsville, Ont.—Flower-pot and saucers.	721	5 Farrar, G. H., & L. E., St. John, Q.—Fancy flower-pots.	721
2 Ahern, J. H., Paris, Ont.—Flower-pots and saucers.	721	6 Hobson, Walter, Quebec, Q.—Flower-pots.	721
3 Pratt, Chorless, London, Ont.—Flower-pots and saucers.	721	7 Ney & Ely, Berlin, Ontario.—Bug-catcher.	720

FRANCE.

Ornamental Plants, Hot-Houses, Ornaments, Designs.

Ornamental Trees, Shrubs, and Flowers.

- 1 Roempler, L., Nancy.—Ornamental plants. 700
2 Leroy, Louis, Angers, Maine-and-Loire.—Ornamental plants and fruit trees. 700
3 Verdier, E., senior, Paris.—Gladiolus. 702
4 Verdier, Charles, Paris.
a Gladiolus. 702
b Roses. 705
5 Vilimorin, Andrieux, & Co., Paris.—Seeds, flowers, and vegetables. 709

Hot-Houses, Conservatories, Graperies.

- 6 Roempler, L., Nancy.—Hot-house plants. 710
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